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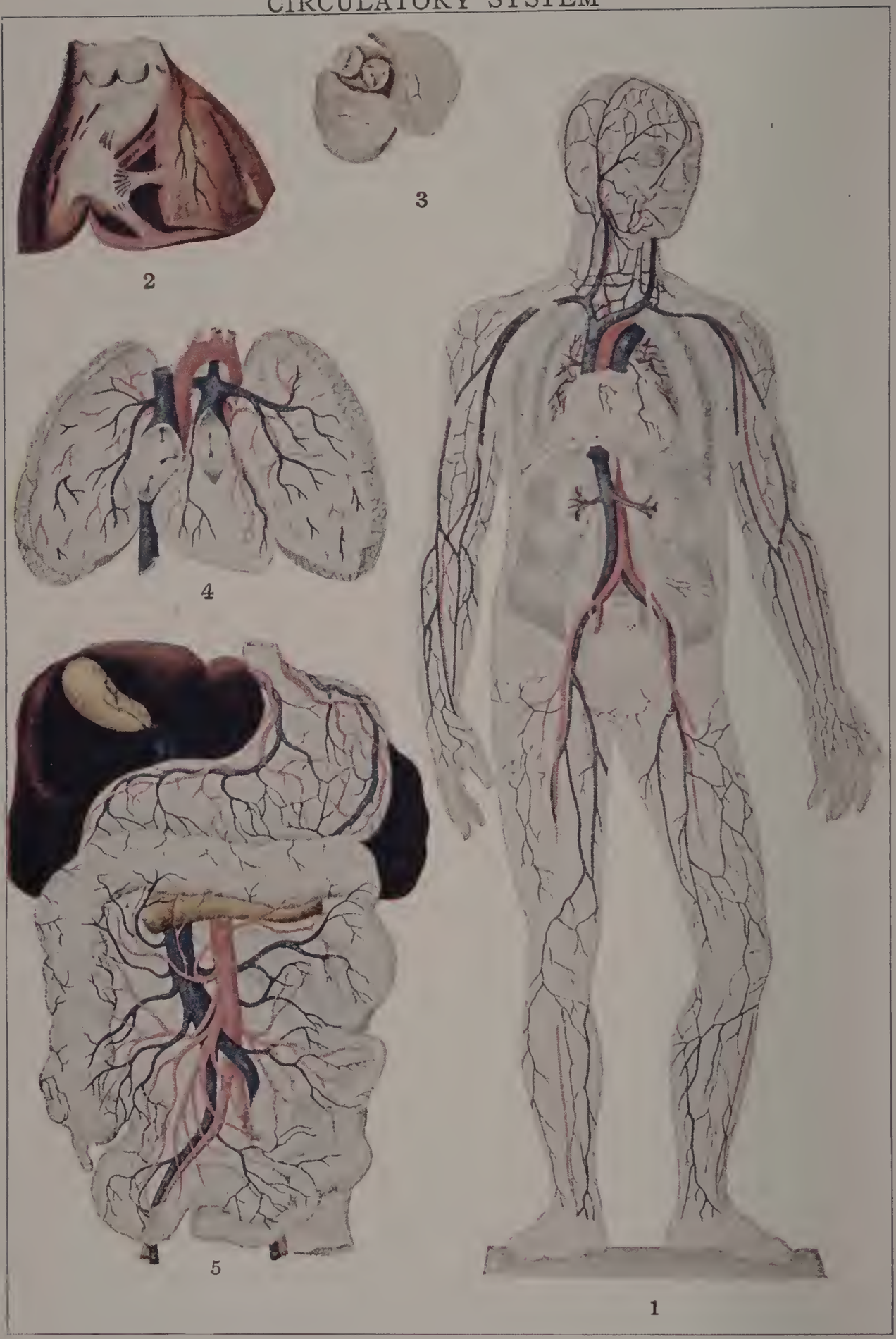


[The red lines show arteries; the blue, veins.]

1. General Circulation in the Human Body.
2. The Heart, showing Interior.
3. Cross Section of the Heart, seen from above.
4. Circulation of Blood in the Lungs.
5. Circulation of Blood in Digestive Tract.

# THE UNITED EDITORS PERPETUAL ENCYCLOPEDIA

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No. 1

# SCHEME OF SOUND SYMBOLS

## FOR THE PRONUNCIATION OF WORDS.

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*Note.*—(-) is the mark dividing words respelt phonetically into syllables; (′), the accent indicating on which syllable or syliables the accent or stress of the voice is to be placed.

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| Sound-symbols employed in Respelling. | Representing the Sounds as exemplified in the Words. | Words respelt with Sound-symbols and Marks for Pronunciation. |
|---|---|---|
| *ā* | mate, fate, fail, aye | *māt, fāt, fāl, ā.* |
| *ă* | mat, fat | *măt, făt.* |
| *â* | far, calm, father | *fâr, kâm, fâ′thėr.* |
| *ä* | care, fair | *cär, fär.* |
| *aw* | fall, laud, law | *fawl, lawd, law.* |
| *ē* | mete, meat, feet, free | *mēt, mēt, fēt, frē.* |
| *ĕ* | met, bed | *mĕt, bĕd.* |
| *ė* | her, stir, heard, cur | *hėr, stėr, hėrd, kėr.* |
| *ī* | pine, ply, height | *pīn, plī, hīt.* |
| *ĭ* | pin, nymph, ability | *pĭn, nĭmf, ă-bĭl′ĭ-tĭ.* |
| *ō* | note, toll, soul | *nōt, tōl, sōl.* |
| *ŏ* | not, plot | *nŏt, plŏt.* |
| *ô* | move, smooth | *môv, smôth.* |
| *ŏ* | Goethe (similar to *e* in her) | *gŏ′tėh.* |
| *ow* | noun, bough, cow | *nown, bow, kow.* |
| *oy* | boy, boil | *boy, boyl.* |
| *ū* | pure, dew, few | *pūr, dū, fū.* |
| *ŭ* | bud, come, tough | *bŭd, kŭm, tŭf.* |
| *ů* | full, push, good | *fůl, půsh, gůd.* |
| *ü* | French plume, Scotch guid | *plüm, güd.* |
| *ch* | chair, match | *chär, măch.* |
| *ċh* | German buch, Heidelberg, Scotch loch (guttural) | *bôċh, hī′dėl-bĕrċh, lŏċh.* |
| *g* | game, go, gun | *gām, gō, gŭn.* |
| *j* | judge, gem, gin | *jŭj, jĕm, jĭn.* |
| *k* | king, cat, cot, cut | *kĭng, kăt, kŏt, kŭt.* |
| *s* | sit, scene, cell, city, cypress | *sĭt, sēn, sĕl, sĭt′ĭ, sī′prĕs.* |
| *sh* | shun, ambition | *shŭn, ăm-bĭsh′ŭn.* |
| *th* | thing, breath | *thĭng, brĕth.* |
| *ŧh* | though, breathe | *ŧhō, brēŧh.* |
| *z* | zeal, maze, muse | *zēl, māz, mūz.* |
| *zh* | azure, vision | *ăzh′ėr, vĭzh′ŭn.* |

## CAT.

CAT, n. *kăt* [Ger. *katze;* Icel. *kottr*, a cat: F. *chat*—from mid. L. *catus:* Sp. *gato*]: a well-known domestic animal. CAT-BAND, a bar of iron for securing a door. This name is given to the strong hook used on the inside of a door or gate, which, being fixed to the wall, keeps it shut; a chain drawn across the street for defense in time of war. CATGUT, n. strings for musical instruments made of the entrails of animals. CAT'S-PAW, a term of contempt, applied to a person who is made the tool of another; a dupe; a puff of wind. CATKIN, n *kăt'kĭn* [*kin*, little]: a spike of small unisexual flowers, resembling a cat's tail (see CATKIN). CAT-FISH, a large and destructive sea-fish; called also, *sea-wolf*. CAT-HEAD, a projecting timber at the bow of a ship through which the ropes pass for holding the anchor. CAT-HEATHER, a finer species of heath, *Erica tetralix* or *E. cinerea*, low and slender, growing more in separate upright stalks than the common heath, and flowering only at the top. CAT-HOLES, the name given to the loop-holes or narrow openings in the walls of a barn. CAT-LIKE, stealthily, like a cat. CAT'-MINT, n. a wild plant, the *Nĕpĕtă catărĭă*, ord. *Labĭātæ*. CAT-POSY, the daisy, *Bellis perennis*. CAT-STEPS, the projections of the stones in the slanting part of a gable. CAT'S-CRADLE, a familiar play among children. A packthread is twisted on the fingers of both hands of one of the party in a certain manner, and then transferred to the hands of another. CAT'S-EYE, a greenish translucent quartz, esteemed as a jewel, and usually cut with a rounded top; quartz. CAT-BLOCK, in a *ship*, tackle used to raise the anchor. CAT-CALL, the loud noise made by the forcible emission of the breath through two fingers placed in the mouth; a squealing cry; a small squealing instrument. CAT'LING, n. the down or moss growing about walnut-trees; in *surg.*, a kind of knife. CAT-O'-NINE-TAILS: see in alphabetic order: also FLOGGING. CAT-AND-CLAY, the materials, straw and clay, of which a mud-wall is constructed in many parts of Scotland. CAT-AND-DOG, an old Scotch game, apparently an early form of cricket. CAT-AND-DOG LIFE, always quarrelling and snarling as the common manner of life. TO BE MADE A CAT'S PAW, to be employed as the tool of another, as the medium of accomplishing his purposes—in allusion to the fable of the monkey who used the cat's paw to take the roasting chestnuts out of the fire. KILKENNY CATS, said to have fought so furiously and fiercely that the contest ended in leaving only their tails; applied to any municipal or personal combatants who are grievously injured without benefit accruing to either.

CAT [Lat. *catus*]: name sometimes extended to the whole family of quadrupeds designated by zoologists *Felidæ* (q.v.) genus *Felis* of Linnæus; sometimes more restrictedly applied to a section of that family, containing a number of its smallest species, the domestic cat and species most nearly allied to it. These are the subject of the present article. They all pursue their prey on the branches of trees, many of them there more than on the ground, and are most expert climbers.

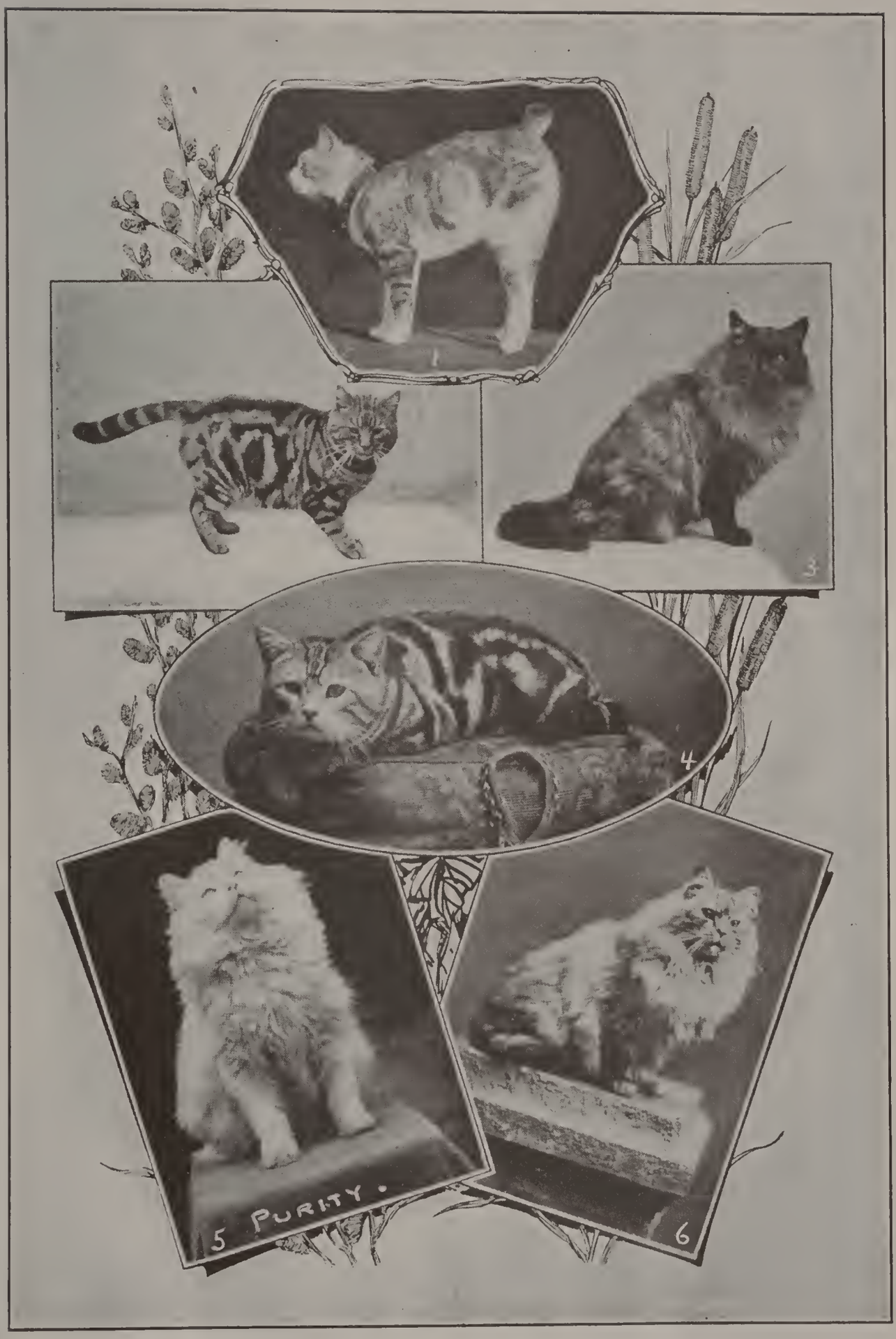
## CAT.

The origin of the domestic cat is not ascertained; and by some naturalists it is described as a distinct species, under the name *Felis domestica*, at least a convenient provisional designation, until satisfactory reasons appear for referring it to some species existing in a wild state. By many, indeed, the domestic cat has been confidently pronounced to be a mere domesticated variety of the common wild cat. (*Felis Catus*) of Europe and n. Asia; but to this there are many objections, the most important being that it is always smaller, contrary to the usually-observed effect of domestication in animals; and that in cats of the domesticated race which have run wild, and in their known progeny, there is no appearance whatever of a tendency to return to the type of the true wild cat.—Another opinion as to the origin of the domestic cat has obtained the assent of a considerable number of naturalists; that it is derived from the *Felis maniculata*, or Gloved Cat of n. Africa, a species discovered by the celebrated traveller Rüppell. But Mr. Owen has stated a perfectly conclusive reason against identifying the domestic cat with the *Felis maniculata*, that the first deciduous molar tooth in the latter has relatively thicker crown, and is supported by three roots, while the corresponding tooth both of the domestic cat and of the wild cat of Europe has a thinner crown, and only two roots.

The certainty, however, that the cat existed as a domestic animal in ancient Egypt, indicates that its original is probably to be sought on the banks of the Nile, or in some of the countries from which the ancient Egyptians might most readily have obtained it. Of its rarity in Britain in former times, when the wild cat was common in all the woods which covered so much of the island, a curious evidence is afforded by a Welsh law quoted by Pennant—a law of the reign of Howel the Good (died A.D. 938)—fixing the prices of cats according to their age and qualities, beginning with a price for a kitten before it could see, and enacting that if any one stole or killed the cat that guarded the prince's granary, he was to forfeit a milk ewe, its fleece and lamb; or as much wheat as when poured on the cat suspended by its tail, the head touching the floor, would form a heap high enough to cover the tip of the tail.

The domestic cat has distinctive characteristics which are well-known: its purring, its mewing, and the other sounds which it makes, its aversion to wet its feet or fur, its love of heat and comfort, its stealthy manners when in quest of prey, its patient watchfulness, often fatal to mice, and other points of its natural history.

The delight which a cat takes in tormenting a mouse before killing it has sometimes been mentioned as an apparent exception to the general character of goodness manifest in the instincts of animals. It is noticeable, however, and when the prey is a bird instead of a mouse, a cat immediately inflicts a mortal wound, as if aware of its greater power of escape.




1. Manx.
2. Brown Tabby.
3. Smoke Persian.
4. Silver Tabby.
5. White Persian.
6. Shaded Silver.

The eye of the cat is capable of much contraction and dilatation of its pupil, so that the animal can see in a very feeble light, and is thus adapted for nocturnal habits, to which it shows strong tendency.

The fur of the cat is very free from any oily substance, so as to be readily injured by water, and is capable of being rendered highly electric by friction, particularly in very dry or frosty weather. An electric spark is readily obtained from the tip of the ear.

The strong statements of Buffon gave for a time currency to the opinion that the cat is incapable of affection, and retains, even in a domesticated state, its ferocity, merely restrained by selfishness, and disguised by cunning. The belief is very prevalent that the cat forms an attachment to places only, and not to persons. There are, however, many well-authenticated instances in which the cat has shown a strong attachment to its master or mistress, though this quality is far less frequently and remarkably displayed than by the dog. The recorded instances of the cat's attachment to places, are worthy of attention in connection with the subject of instinct in animals. Some of these instances of cats finding their way back from great distances to their former home are very wonderful, and indeed cannot be explained on any grounds or principles known. The same instinct and power, however, are displayed by some other animals.

The varieties of the domestic cat are neither numerous nor very different. The *Tortoise-shell cat* differs from the most common variety chiefly in color, though it is also particularly elegant and delicate in form. It is much more common in s. Europe than in Britain. The *Angora cat* is a beautiful variety, remarkable for long silky hair.—The *Chinese cat* has a fine glossy fur, and is remarkable for pendulous ears. The *Chartreuse* is of bluish color. It is supposed that the *Tabby* may have undergone less change by domestication than any other variety.

The wild cat is still found in a few of the woods of the n. of England, in the mountains of Wales, the Highlands of Scotland, and some parts of Ireland. It has entirely disappeared from districts where it was once common. It is the only beast of prey remaining in Britain the strength and fierceness of which make it at all dangerous to man; but an encounter with a wild cat is safe only to a man well armed. Fortunately, the instances of its attacking when unmolested are rare, but such instances have occurred. The wild cat is an inhabitant of deep thickets and recesses of woods and of the rocky and bushy ravines of mountainous districts. Its fur, which is soft, long, and thick, is held in considerable estimation. The color of the face is yellowish-gray, with a band of black spots toward the muzzle; the forehead is brown; the head is gray, with two black stripes passing from the eyes, over and behind the ears; the back, sides, and limbs are gray, darker on the back, paler on the sides, with a blackish longitudinal stripe along the middle of the back, and numerous paler

curved ones on the sides; the tail is ringed with light-gray and black, the tip being black. The length of a medium-sized male wild cat is almost two ft., exclusive of the tail but this length is sometimes considerably exceeded.

The animal often called wild cat in America is the bay lynx: see LYNX. See Mivart, *The Cat* (1881).

*Superstitions regarding cats.*—Cats have been objects of superstition from the earliest ages In Egypt, they were held in highest reverence; temples were erected in their honor; sacrifices and devotions were offered to them; and it was customary for the family in whose house a cat died to shave their eyebrows. In the middle ages they were regarded as the familiars of witches The favorite shape of Satan was said to be that of a black cat, and the animal was an object of dread instead of veneration There is or was a belief among sailors, that the frolics of a cat at sea portended a storm. Many people still prophecy rainy weather from a cat washing its face; and a cat-call on the

Wild Cat.

house-top was formerly held to signify death. Their supposititious connection with witches, and the foolish belief that a cat had nine lives, have led to the perpetration of great cruelties upon them.

CAT, on Shipboard: name for many of the ropes or lines. CAT-FALL is a rope for heaving up the anchor from the water's level to the bow; it works through CAT-BLOCKS, and is connected with the CAT-HEAD. CAT-HARPINGS are small ropes for tightening the shrouds. CAT-HEADS, just named, are two strong, short timbers projecting from the bow, on each side of the bowsprit. CAT-HOOK is the fastening for the ring of the anchor to the cat-block. CAT-ROPE is a line for hauling the cat-hook about; the CAT-BACK-ROPE hauls the block to the ring of the anchor in order to hook it. CAT, v. to bring up to the cat-head. CAT-BEAM, or BEAKHEAD-BEAM is the broadest beam in the ship, generally made of two beams tabled and bolted together. CAT-HOLES in a ship are two little holes astern above the gun-room ports, through which the cable or hawser passes to

1. White Persian.
4. Siamese.
5. Silver Persian.
2. Light Silver.
6. Short Hair Tortoise Shell.
3. Cream Persian.

the capstan. CAT-RIG, a rig which in smooth water surpasses every other, but unsuited for sea or heavy weather.

CAT, or CAT-CASTLE, in the military engineering of the middle ages, a kind of movable tower to cover the sappers as they advanced to a besieged place. The garrison sometimes poured down burning pitch and boiling oil from the walls upon the cat; but occasionally this stratagem was disastrous, for the besiegers availed themselves of the blazing tower to burn the wooden gates of the town or fortress.

CATA, *kăt′ă* [Gr.]: a prefix signifying, down; against; opposition or contrariety; completeness; intensity.

CATABASION, n. *kăt-ă-bā′zhŭn* [Gr. *katabasion*—from *kata*, down, and *basis*, a going]: a chamber or crypt under a church, where relics are kept.

CATABOLISM, n. *kăt-ăb′ō-lizm* [Gr. *kata*, down; *ballo*, to throw]: the process by which living matter, within an organism, is broken down into simpler products. CATABOLIC, a.: pertaining to catabolism.

CATABROSA, *kăt-a-brō′sa* [Gr. *catabrōsis*, a gnawing]: genus of grasses formerly included in *Aira* (see HAIR-GRASS), but distinguished by the leathery *paleæ*, which are ribbed, truncated, erose (as if gnawed at the points), awnless, and nearly equal. The glumes are much shorter than the spikelets, membranaceous, and very obtuse. The general appearance is different from that of the genus *Aira*.—*Catabrosa aquatica* is of wide geographic and climatic range, being found throughout Europe, from Lapland to the Mediterranean, and in the torrid regions of South America. It grows only in very moist situations, as the muddy margins of lakes and rivers, ditches, etc. and is cultivated only in irrigated meadows, or on the banks of rivers subject to overflow by high tides, where the ground is always wet and muddy. It is one of the most valuable grasses for such situations, its foliage being peculiarly sweet, and much relished by cattle. Both its foliage and its seeds afford much food to water-fowl, and to some kinds of fish, particularly carp. Its leaves often float, and its stalks seldom rise more than a foot or fifteen inches above the surface of the water. It has a stiff branching panicle; with whorled spreading branches, and its seeds are small. When its artificial propagation is attempted it is by dropping freshly gathered stems into still waters, or scattering them on the mud, more frequently than by sowing the seeds. It is called sometimes WHORL GRASS, sometimes SWEET WATER GRASS.

CATACAUSTICS, n. plu. *kăt′ă-kaws′tĭks* [Gr. *kata*, against; *kaustĭkos*, burning]: in *opt.*, the curves formed by the reflection of the rays of light. CAT′ACAUS′TIC, n. a particular curve formed by reflection: ADJ. pertaining to.

CATACHRESIS, n. *kăt′ă-krē′sĭs* [Gr. *katachrēsis*, misuse, abuse]: in *rhet.*, an abuse of a trope or of words; the use of a word in a sense different from its own. CAT′-

ACHRES'TIC, a. *-krēs'tĭk*, or CAT'ACHRES'TICAL, a. *-tĭ-kăl*, forced; far-fetched. CAT'ACHRES'TICALLY, ad. *-lĭ*.

CATACLYSM, n. *kăt'ă-klĭzm* [Gr. *kataklus'mos*, inundation—from *kata*, down; *kluzein*, to wash]: any violent inundation that sweeps over a country. CAT'ACLYS'MAL, a. *-klĭz'măl*, pertaining to an inundation or to its destructive effects. CAT'ACYLS'MIC, a. *-klĭz'mĭk*, of or pertaining to. CATACLYSMIST, n.: an upholder of the theory of cataclysms.

CATACOMB, n. *kăt'a-kōm* [from Greek *kata*, down, and *kumbē*, hollow]: subterranean galleries and chambers used in early times for the most part as burial places. The most important are those around Rome, about 60 in number, the best known being along the Appian Way. They were excavated by the Christians of the first, second and third centuries to provide a place for the burial of their dead, since their religious scruples forbade cremation, and they consist of a network of galleries, each 3–5 feet wide and about 8 feet high. In the walls of these galleries recesses called loculi were hollowed out, about 6 feet long and sometimes wide enough to receive two or even three bodies. There are several of these loculi, sometimes 6 or 7, one above another. The openings are closed with stone slabs on which inscriptions are carved. At intervals the galleries open in vaulted rooms called cubicula, which were used apparently as family burial places, and in which religious services were sometimes held. Often the galleries run one beneath another, sometimes forming as many as five successive stories. The depth below the surface varies from 20 to 75 feet. The total length of the galleries has been variously estimated at from 500 to 700 miles, and the number of bodies here interred at from two to six million. By Roman law the Catacombs as cemeteries were inviolable, and they therefore afforded temporary sanctuary to Christians fleeing from persecution. Later however, the persecutors disregarded their sacred character and pursued their victims into these hiding places. Hence the Christians sought to conceal the entrances to the catacombs, demolishing the chapels that marked these entrances, and opening secret approaches, often through deserted sand pits (arenaria). When in 312 Constantine granted immunity from persecution to Christianity the catacombs were of course no longer used as places of refuge, but burials were still made in them for about a century. The catacombs were repeatedly pillaged by Goths and Lombards, so that the popes, to prevent further profanation, removed many bodies, especially those of saints and martyrs, within the city walls, and by the ninth century the catacombs were neglected and soon totally forgotten. They were rediscovered in 1578, Antonio Bosio devoting many years to their exploration. In recent times De Rossi, Marucchi and Wilpert have made exhaustive study of them. See also NORTHCOTE, *Roma Sotterranea*, London, 1879. Many of the oldest inscriptions in the catacombs are in Greek, showing the

nationality of the earliest Christians in Rome. The constantly recurring symbols are the lamb, fish, dove, anchor, cross, palm-branch (marking the graves of martyrs), and the Good Shepherd. There are very few portraits, but the soul of the departed is often symbolized as a kneeling female figure, called the Orans. Biblical scenes are numerous, all symbolic of redemption or the resurrection: Lazarus, Jonah, the Hebrew children in the fiery furnace, Daniel in the lions' den, the Last Supper, the rite of baptism, etc. Terra-cotta lamps, glass vases, coins, etc., have been found. The catacombs are of the greatest archæological importance, for they are the only surviving monuments of Roman Christianity of the first three centuries, not a church of that period having escaped destruction.

The catacombs of Naples, cut into the Capo di Monte, resemble those at Rome, and evidently were used for the same purposes, being in many parts literally covered with Christian symbols. Catacombs are also found in the Crimea, Asia Minor and Syria, and near Alexandria, Palermo, Syracuse, Chiusi, and elsewhere. Some are much earlier than the Christian era. In Peru and other parts of South America catacombs have been discovered. The catacombs of Paris are abandoned quarries into which were cast the contents of such burying-places as were found to be pestilential, and the bodies of some of the victims of 1792.

CATACOROLLA, n. *kăt'ă-kŏ-rŏl'lă* [Gr. *kata*, under, down, and *corolla*]: in *bot.*, a second corolla formed inside or outside the first one.

CATACOUSTICS, n. plu. *kăt'ă-kows'tĭks* [Gr. *kata*, against, and *acoustics*]: the doctrine of reflected sounds or echoes.

CATADIOPTRIC, a. *kăt'ă-dī-ŏp'trĭk:* relating to both reflection and refraction of light.

CATAFALQUE, n. *kăt'ă-fălk* [F. *catafalque*—from It. *catafalco*, a funeral decoration; mid. L. *cadafal'tum*, a scaffold]: in funeral solemnities, a temporary wooden structure decorated with paintings, sculpture, drapery, etc., intended to represent a tomb, and show the coffin; an elaborate hearse. A magnificent catafalque was that used at the interment of Micheal Angelo, at Florence.

CATALAN, *kăt'ă-lăn:* the language spoken in Catalonia and Valencia, in Spain; a kind of wine; Adj. of or from Catalonia.

CAT'ALAN: a blast furnace for reducing ores, extensively used in the north of Spain, particularly in the province of Catalonia. It consists of a four-sided cavity or hearth, which is always placed within a building and separated from the main wall thereof by a thinner interior wall, which in part constitutes one side of the furnace. The blast-pipe comes through the wall, and enters the fire through a twyer which slants downward. The bottom is

formed of a refractory stone, which is renewable. The furnace has no chimneys. The blast is produced by means of a fall of water, usually from 22 to 27 feet high, through a rectangular tube into a rectangular cistern below, to whose upper part the blast-pipe is connected, the water escaping through a pipe below. This apparatus is exterior to the building, and is said to afford a continuous blast of great regularity; the air, when it passes into the furnace, is, however, impregnated with moisture.

CATALANI, *kâ-tâ-lâ'nē*, ANGELICA: celebrated Italian singer: 1780 (or 84)–1849, June 13: b. Sinigaglia, in central Italy. She was educated in the convent of St. Lucien, near Rome, where, in her seventh year, she showed such wonderful vocal powers that strangers flocked from all quarters to hear her. She made her first public appearance at Venice, in her 16th year, and experienced a succession of triumphs in every country in Europe for more than 30 years, amassing immense sums of money. The Italian opera in Paris was twice under her direction; but her husband's interference and extravagance brought her into much trouble. Her large, queenly person and fine countenance, the immense volume, range, and flexibility of her voice, her power of sustaining her notes, in contrast with the lightness and facility of her unerring execution, everywhere took her audience by storm. Her expression, although fine, and her whole style, surprised rather than touched the heart. In concert-singing her great triumphs were in *Rhode's Air* with variations, and *God save the King* —in which she would say *shave;* and in oratorios her special triumph was in *Luther's Hymn*, her delivery of which, when her marvellous voice alternated with the trumpet's sound, was so sublimely awful that the audience were hushed and pale, and some were borne away fainting. The throat from which these wondrous sounds proceeded was physically of such dimensions, that a physician, when called to look into it, declared he could have passed down a penny-loaf! In 1830, Madame Catalani purchased near Florence a villa, formerly belonging to the Medici family, where she gave free instructions to girls who had a talent for singing, on condition of their taking the name of Catalani. In the spring of 1849, when political disturbances broke out in Tuscany, she went with her daughters to Paris, where she died of cholera.

CATALAUNIAN PLAIN, *kăt-a-law'nĭ-an* (*Campi Catalaunici*): anc. name of the wide plain surrounding Chalons-sur-Marne, in the old province of Champagne, France, celebrated as the field of battle where the West Goths and the forces under the Roman general Aëtius gained a great victory over Attila, A.D. 451. A wild tradition (made the subject of a striking picture by Kaulbach, *Die Hunnenschlacht*, or *The Battle of the Huns*) tells that three days after the great fight the ghosts of the fallen myriads appeared on the plain and renewed the conflict.

CATAL'DO, SAN: town of Sicily, province of Caltani-

setta; five m. w. of the town of Caltanisetta. There are productive sulphur mines in its vicinity. Pop. 15,000.

CATALEPSY, n. *kăt'ă-lĕp'sĭ* [Gr. *katalēpsis*—from *kata*, down; *lepsis*, a taking or seizing]: a nervous affection in which the muscles are rigid but not inflexible, the limbs retaining any position in which they may be placed. The disease occurs in paroxysms like epilepsy (q.v.), but there are no convulsions, the patient simply becoming unconsious and the muscles being set in the position they last held before the attack began. At first the muscles are absolutely stiff, but later they become plastic, when the patient can be put in any position and will maintain it for a time. If the leg is raised from the bed it will remain elevated until gradually pulled down by the force of gravity; the patient's power of initiating muscular movement is entirely abolished. During the attack the patient should be placed in an easy position on the bed or couch, and should be allowed to lie there undisturbed; no good is effected by attempts to arouse the patient. If the sleep which follows the seizure be long continued (it may last for weeks) it may become necessary to feed the patient artificially and to see that the bladder and bowels are regularly evacuated. The state may be directly induced by suggestion or manipulation in the hypnotic condition (see HYPNOTISM) and occurs spontaneously in functional disturbances, notably in hysteria. The statue-like posture is frequently maintained for long periods, and is accompanied by marked insensibility. At times the rigidity assumes a form in which the limbs may be set first in one posture then in another, each being retained until altered. This vacant immobility characterizes the cataleptic state and helps to distinguish it from allied trance states. Cataleptic conditions occur as the result of intense religious excitement in individuals disposed to nervous disorder. See HYSTERIA, TRANCE, CATAPLEXY.

CATALOGUE, n. *kăt'ă-lŏg* [F. *catalogue*—from Gr. *kătal'ŏgos*, a list—from *kata*, down; *logos*, a word]: a list of names in regular order; a roll; a register: V. to make a list of. CAT'ALOGUING, imp. CAT'ALOGUED, pp. *-lŏgd*.

CATALONIA, *kăt-a-lō'nĭ-a* (Spanish, *Cataluña*): old province and principality of Spain, now divided into the provinces of Barcelona, Tarragona, Lerida, and Gerona; total area 12,483 sq. m.; pop. (1900) 1,946,382. Catalonia occupies the n.e. corner of Spain, having France on the n., and the Mediterranean on the e. and s.e. It is watered by the Llobregat, and the Ter, and by some of the affluents of the Ebro, the last mentioned river having its embouchure in Catalonia. The coast is rugged, its boldest promontories being Capes Creus and San Sebastian, and its deepest indentations the bays of Rosas and Tarragona. Near Barcelona, oranges flourish in the open air; the fields in some parts are bounded by aloe-hedges, and olives grow on Montserrat. Cork-trees grow on the mountains, and thickets of thorn-apple, laurel, myrtle, pomegranate, box, rosemary,

etc., extend where the cork has its limits. Northern upper C. has a more severe winter than the south; but everywhere, vineyards and olive-gardens cover the slopes, and cornfields extend in the valleys. Among the products are hemp, flax, madder, barilla, and saffron. Hazel-nuts, a variety called Barcelona nuts, are extensively grown. Meadow-lands and pastures are comparatively rare, and horned cattle are, therefore, found mostly in the districts bordering the Pyrenees; while few horses and mules are kept; but sheep, goats, and swine are bred in considerable numbers. Silk-worms and bees are reared. The coasts abound with fish, and game is plentiful. The minerals are coal, copper, manganese, zinc, lead, cobalt, salt, sulphur, and many varieties of marble.

C. is the principal manufacturing province of the kingdom—is, in fact, 'the Lancashire of Spain.' The inhabitants are neither French nor Spaniards, their language, costume, and habits being quite distinct from those of either; they have also local coins, weights, and measures. In energy, industry, and intelligence, they greatly surpass the rest of the Spaniards.

C., under the name of *Hispania Tarraconensis*, was one of the earliest, and remained among the last of the Roman provinces. It was invaded and captured by the Alans, who were followed by the Goths; hence its name, *Gothalania*, changed into Gothalunia or Catalonia. In the 8th c. the Arabs gained possession of the s. part. When Charlemagne, 788, subjugated Spain as far as the Ebro, C. formed the central portion of the Spanish mark, governed by French counts, having Barcelona as their residence. They soon made themselves independent of France. In 1137, Earl Raymund Berengar, by his marriage, united C. with Aragon; and the marriage of Ferdinand and Isabella (1469) united both with Castile, and so C. became a portion of the Spanish monarchy, but never a very peaceable one. In modern times it has repeatedly taken a prominent share in Carlist or other insurrections.

CATALPA, *ka-tăl'pâ:* genus of trees of the order *Bignoniaceæ*, with a two-parted calyx, a bell-shaped corolla and five stamens, two of which bear a cylindrical pod often one ft. long, and broadly-winged seeds. There are three species: the chief, *C. syringifolia*, is indigenous in the southern states, where it is often over 50 ft. high, with a trunk two ft. in diameter. It has a silver-gray bark, few branches, a wide-spreading head, and large, heart-shaped, pale green leaves; the flowers are white, dotted with purple and violet; the pods remain on the tree through the winter. The C. is much cultivated in the northern states and in Europe. In New England it dwindles to a shrub, and is often killed by frost. In milder climates it will grow to a height of 20 ft. in ten years, and then begin to blossom. One in Gray's Inn gardens, London, is said to have been planted by Bacon. In Italy and southern France it is often planted along the roadside. The C. may be propagated by seeds, or from cuttings of the root. Its wood being light, of fine texture, and susceptible of a brilliant polish, is used by cabinet-makers.

CATALYSIS, n. *kă-tăl'ĭ-sĭs* [Gr. *katăl'ŭsis*—from *kata*, down; *lŭō*, I loosen]: in *chem. physics*, term used to designate certain phenomena, in which changes in the composition of substances are effected by the presence of another body which itself undergoes no change. CATALYTIC, a. *kăt'ă-lĭt'ĭk*, relating to catalysis. The force in catalysis has been ascribed to the mere 'action of contact.' Fermentation is an example of this force (see BEER), when one part of yeast acting upon the sugar of the sweet worts, without entering into combination with it, compels 100 parts of sugar to pass into alcohol and carbonic acid. Germination, or the sprouting of grain when placed in the ground, is another example where one part of *diastase* changes 1,000 parts of starch into sugar. No plausible theory has been brought forward to account for these changes, or to define what the force of C. is. Liebig suggested, as an explanation, 'that a body in the act of combination or decomposition enables another body with which it is in contact to enter into the same state;' but this view does not explain C., as that force does not act in the majority of cases where changes are proceeding, and, moreover, the acting substance, while changing itself, never throws the body acted upon into the *same state of change*, but causes it to assume a new series of changes different from those pursued by itself.

CATALYSOTYPE, *kăt-a-lĭs'ō-tīp:* a name given to a modification (by Dr. Wood) of the calotype process, in photography, on the assumption that light set up a catalytic action (see CATALYSIS) among the ingredients employed. The paper is first washed with very dilute hydrochloric acid, to prevent the formation of yellow patches of insensitiveness, and then treated with sirup of iodide of iron containing a trace of free iodine; it is then partially dried between folds of blotting-paper, and sensitized by brushing over it a solution of nitrate of silver of ten grains to the ounce. Immediate exposure in the camera follows; after which, though no picture be visible at first, if it be allowed to remain in the dark for a period which varies with the length of time it was exposed, and the amount of light, a negative picture of great perfection is gradually developed. It is not necessary, however, for the explanation of this phenomenon, to assume that a catalytic action is set up, inasmuch as the ordinary chemical reactions are quite sufficient to account for it. As soon as *nitrate of silver* comes in contact with the moist *iodide of iron* with which the paper is first imbued, an interchange of elements takes place, *iodide of silver* is precipitated in the pores of the paper, and *protonitrate of iron* is diffused over the surface; and this latter salt is even a more energetic developing agent than the ordinary gallic acid, hence the seemingly spontaneous appearance of the picture. This process is so uncertain in its results that it is seldom practiced.

CATAMARAN, n. *kăt'ă-mă-răn'* [*cathamaran*, floating trees—native name]: raft formed of three planks or logs lashed together, the middle one serving as a keel, and the other two for the sides. The rower stands or partly kneels

on the middle plank, and works a paddle. These simple vessels are used by the natives of Madras, to maintain communication between ships and the shore, ordinary boats being rendered unsafe by the surf. By the adoption of a similar construction on a larger scale, some

Indian Catamaran.

catamarans are made large and strong enough to carry goods, and even artillery. Catamarans used in Brazil consist simply of three logs of wood tapered at the end and lashed together; they carry a sail.

CATAMARCA, *kâ-tâ-mâr'kâ:* province of the Argentine republic, lat. 25°–29° s., lon. 65°–69° w.; bounded n. by Salta, e. by Tucuman and Santiago, s. by Rioja, and w. by the Andes; 31,500 sq. m. It is largely mountainous; the highest range, Sierra de Aconquija, is nearly 17,000 ft. high. The streams are mostly dry in summer and torrents in winter; the only river is the Santa Maria. Some of the elevated plains are sandy deserts; others are yearly inundated, and on the withdrawal of the waters covered with blocks of salt, which are carried away on llamas and sold. Gold and silver mines were formerly worked, and copper is still found in quantities. Parts of C are fertile and produce abundantly grain, vegetables, and fruit, especially apples. Cotton, though said to be the finest known, is raised on a smaller scale than formerly. The forests yield many varieties of timber. Earthenware, ponchos, and woolen and alpaca fabrics are manufactured; cattle, mules, asses, sheep, hides, leather, wine, brandy, tobacco, pepper, cochineal, anise-seed, and copper are exported. Pop. (1895) 89,645, abt. one-half Mestizos and Indians of the once powerful Calchaquio tribe. Immigration from Europe has been active since 1875.

CATAMARCA (originally *San Fernando de C.*): capital of province of C.; lat. 28° 20′ s., long. 66° 25′ w. It was built 1685 to replace the former cap. Chacca, the site of which, not far w., had been found unhealthful and exposed to inundation. C. is built with some regularity, has a large square, an obelisk commemorating national independence, a small town house, a fort, a Franciscan monastery, and a St. Theresa convent; another, formerly used by the Mercedarios and the Jesuits, is now a high school. C. is the commercial centre of a large and well-cultivated dist. It manufactures flour and hats, and exports dried figs, wine, brandy, and cotton. Pop. 8,000.

CATAMENIA, n. *kăt'ă-mē'nĭ-ă* [Gr. *katamēnĭŏs*, month-

ly—from *kata*, down; *men*, month]: the monthly courses of females (see MENSTRUATION). CAT'AME'NIAL, a. *-me'-ni-al*, pertaining to.

CATANDUANES, a small island in the Philippines, e. of Luzon, about 90 m. long by 50 m. wide; area 704 sq. m. It is mountainous, and is reputed to have rich gold deposits. In 1900 the island with Leyte and part of Luzon was created a military department, over which Gen. John C. Bates was placed in command. There are no large towns in Catanduanes. Pop. (1899) 35,633.

CATANIA, *kâ-tâ'nē-â*, or CATANEA, *kâ-tâ'nā-â:* city and seaport of Sicily, cap. of the province of Catania; on the e. coast near the foot of Mt. Etna, 31 m. n.n.w. of Syracuse. The fertile and well-cultivated neighborhood of Catania along the s.e. base of Mt. Etna, is styled 'the granary of Sicily,' and has given to Catania the title, 'La Bella Catania.' By eruptions of the great volcano and attendant earthquakes, the city has been several times almost entirely destroyed—especially in 1693; but out of its ruins it has always risen with increased beauty, and is now the finest city in Sicily, being built throughout on a beautiful and consistent plan, from which no deviation is allowed. The harbor of Catania, formerly good, was choked by a stream of lava in 1693, and the mole was partly destroyed, so that now it has only a roadstead, which is guarded by a fort, and serves as a landing-place. It has several squares, the finest of which, in front of the cathedral, has a statue of an elephant sculptured in lava. Among its chief public buildings are the Benedictine convent and church of San Nicolo, with one exception the grandest structure of the kind in Europe; the town-hall, the cathedral, with its noble granite columns, and the university, founded 1445. It has besides many handsome churches and convents, and several educational and charitable institutions, and is the seat of one of the three high courts in the island. The inhabitants are distinguished by their commercial spirit and industry. Catania has manufactures of silk and linen goods, and of articles in amber, lava, wood, etc. Among the remains of ancient times, that earthquakes have spared, are those of a theatre, an odeium, a temple of Ceres, Roman baths, and an aqueduct. Catania, anciently known by the name *Catana*, was founded by a Greek colony of Chalcidic origin in the latter part of B.C. 8th c.; and as early as the beginning of B.C. 5th c. it was esteemed one of the most flourishing towns in Sicily. It was taken by the Athenians under Nicias and was desolated by Dionysius I.; but again rose under the Roman sway into its former importance. Augustus here founded a Roman colony. It suffered at the hands of the Goths, but once more, under the Byzantine empire, became one of the principal cities in the island. Pop., formerly much more numerous, (1881) 97,355; (1901) 149,295.

CATANIA, GULF OF: inlet of the Mediterranean, on

the e. coast of Sicily, extending in the form of a semicircle from La Trezza Bay to Cape Santa Croce, 18 m. It extends about 10 m. within the coast line, and receives the river Giaretta.

CATANZARO, *kâ-tân-zâ'rō:* city of s. Italy, province of Catanzaro, beautifully situated on the declivity of a rocky hill, near the Gulf of Squillace, and in a very fertile district. On account of its agreeable climate, many wealthy families have made it their residence. It has a cathedral, an old castle of the Norman period, a college, one of the largest, as it is one of the best conducted in the country, and is the seat of one of the four great civil courts of the kingdom. Catanzaro suffered very severely by an earthquake 1783. It has manufactures of silk-velvet and woolen fabrics, and an active trade in agricultural produce. Pop. (1881) 20,931; (1901) 31,824.

CATAPETALOUS, a. *kăt'ă-pĕt'ă-lŭs* [Gr. *kata,* under; *petalon,* a petal]: in *bot.,* having the petals joined to each other and to the stamens, at the base, as in mallows.

CATAPHASIA, n. *kăt*-a-*fās'-i-a,* [Gr. *kata* down, and *phasis,* speaking]: A symptom of certain forms of disorders of speech, characterized by a tendency to repeat again and again the same words or phrases. Such automatic repetition may take place spontaneously or when the patient tries to speak or to reply to a question. The symptom is commonly connected with serious disintegration of the delicate centres of the nervous system. Certain writers use the term to refer to a more general speech-disorder of similar origin and status, in which the patient's language resembles the skeleton outline and imperfect grammatical construction of a child's speech. See SPEECH AND ITS DEFECTS.

CATAPHONIC, a. *kat'ă-fŏn'ik* [Gr. *kata,* against; *phone,* voice]: relating to the reflection of sound.

CATAPHRACT, n. *kăt'ă-frăkt* [Gr. *kataphrak'tos,* encased, fortified]: defensive armor; a horseman in complete armor. CAT'APHRAC'TED, a. *-frâk'ted,* covered with armor or scales.

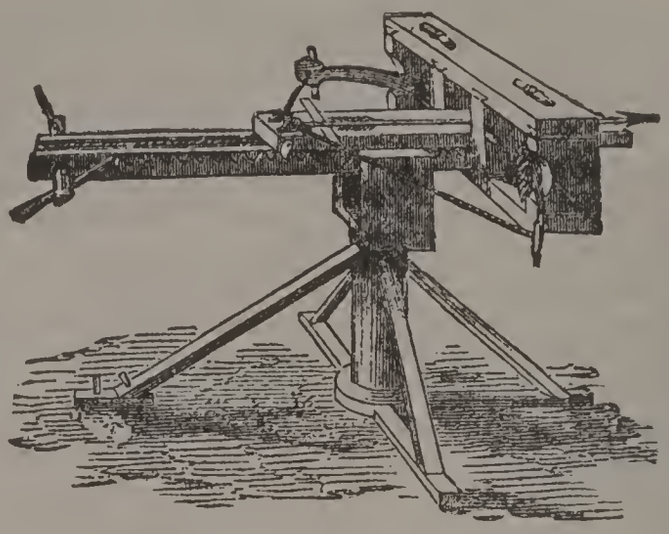
CATAPHYLLARY, a. *kăt'ă-fĭl'ĕr-ĭ* [Gr. *kata,* down; *phullon,* a leaf]: applied to the leaves of a plant when they are mere scales; having the leaves inclosed in buds by perules, or on a root-stock by scales; inclosing true leaves.

CATAPLASM, n. *kăt'ă-plăzm* [L. *cataplas'ma;* Gr. *kataplas'ma*—from Gr. *kata,* down; *plasso,* I mold; F. *cataplasme*]: poultice or plaster; an application to diseased or painful parts, for the purpose of promoting suppuration, relieving pain, and stimulating or soothing the skin, according to circumstances. A cataplasm may be composed of any moist pulpy substance of sufficient consistence to retain the water without dripping or soaking through the thin muslin covering in which it is generally wrapped. The making of a poultice is a matter of some nicety, and unless the proper

consistence is given to the mass, the application is apt to do more harm than good. The linseed-meal poultice is the most easily made, and most satisfactory of all soothing applications. The meal is stirred gradually into a sufficient quantity of boiling water, placed in the bottom of a small basin or teacup, until a perfectly smooth pulp is formed of the proper consistence, and in quantity sufficient to cover completely, to the thickness of three-quarters of an inch, the whole pained part. The pulp is then folded up in muslin or thin calico, and applied as soon as the heat will permit it to be borne. The bread and milk, or even bread and water poultice, is also very good; as is also the oatmeal-porridge poultice, to which a little butter may be added with advantage. A spoonful or two of yeast may be added, if there are foul discharges, or peat charcoal may be sprinkled on the surface of the poultice before it is applied. Carrot poultices are in great favor with the people in some places. Hemlock poultices, made of the fresh leaves, or of the dried leaves, with the aid of some powder of the leaves, form a valuable sedative application in painful diseases; and poppy heads, or even opium, are sometimes infused in the water of which a poultice is made, for the same purpose. A stimulating cataplasm or poultice may be made by sprinkling oil of turpentine, or chloroform, or mustard in moderate quantity on the surface of any ordinary poultice. When considerable irritation of the skin in a short time is desirable, a mustard cataplasm or sinapism [*sinapi*, mustard] is used.

CATAPLEXY, *kăt-a-plex'-ĭ*, n. [from Gr. *kata*, down, and *plesis*, to strike]: a term suggested by Preyer (1878) to describe the condition of immobility and apparent paralysis induced in an animal by firmly restraining all movements. The experiment of forcibly holding a hen, which then for a brief period rigidly retains the posture when released, is described by Kircher in 1646. Similar unnatural postures have been induced in lizards, frogs, birds, guinea pigs, rabbits, and other animals. The phenomenon has been variously explained as similar to catalepsy as induced in hypnosis, as a paralysis by fear or shock, (so-called fascination of a bird by a snake), as allied to the death-feigning instincts, and as a special nervous reflex evoked by the manipulation itself. The fact that the state is most readily induced in certain animals favors an explanation like the last, which refers it to a constitutional trait of the nervous system, which in turn may be brought into play by a psychic shock. See CATALEPSY.

CATAPULT, n. *kăt'ă-pŭlt* [L. *catapulta*—from Gr. *kata*, down; *pallo*, I hurl: comp. Gael. *cathtabhail*, the battle-sling]: engine of war used by the ancients, somewhat resembling the crossbow. In the catapult a string or rope, suddenly freed from great tension, gave a powerful impulse to an arrow placed in a groove. There were also great catapultas, fixed upon a scaffold with wheels, which were used for throwing great stones in sieges; and small ones,



Catapult.

carried in the hand, which were employed in the field. For a description of similar engines of ancient warfare, see BALLISTA: ARBALEST. A toy-catapult is used by boys in their amusements to throw stones.

CATARACT, n. *kât'ă-răkt* [Gr. *katărăktēs;* L. *catarac'ta*, a waterfall—from Gr. *kata*, down; *raktos*, a precipice, or *rhasso*, I dash]: the rushing of a great body of water over steep rocks (see WATERFALL); a disease in the eye by which the vision becomes impaired or destroyed, caused by an opacity of the cornea. See EYE, DISEASES OF THE.

CATARACTS: one of the names given to sudden descents in streams of water, the more general English term being fall or falls. A considerable declivity in the bed of a river produces rapids. When it shoots over a precipice it forms a cataract. If it falls from steep to steep, in successive cataracts, it is often called a cascade. In rocky countries rivers abound in falls and rapids. In alluvial districts, falls, of course, are very rare. Rapids and cataracts are often a blessing to rugged countries, since they furnish the cheapest means of driving machines in manufactories, etc. In recent times waterfalls have been utilized in the furnishing of electric power in addition to the ordinary water-power. Many cataracts are remarkable for their sublimity, the grandest known being Niagara Falls (q.v.), on the Niagara river, between lakes Erie and Ontario. Some others of note are mentioned below.

The Montmorency river, which joins the St. Lawrence a few miles below Quebec, forms a magnificent cataract, 250 feet high. The Missouri, in the upper part of its course, descends 357 feet in 16½ miles. There are four cataracts, one of 87, one of 19, one of 47, and one of 26 feet high. The Yosemite river in California forms a series of magnificent falls, with a total descent of 2,600 feet. The first of them is a plunge of 1,500 feet, and is followed, after a series of beautiful cascades, by a final plunge of about 400 feet. Fully 200 miles from the mouth

Comparison of Victoria Falls (Africa), 400 feet high, with Niagara Falls, 168 feet high. The tower of the Singer Building (New York), 612 feet high, rises above the crest.

of the Hamilton river in Labrador there is a magnificent series of cataracts known as the Grand Falls, the largest having a height of over 300 feet. In Colombia, South America, a great cataract, that of Tequendama, is formed by the Bogotá river. The river precipitates itself through a narrow chasm, about 36 feet broad, to the depth of over 600 feet. On the Potaro river in British Guiana, the Kaieteur Fall, 740 feet high, and about 370 broad, is a splendid spectacle, and just below it is a second fall of 88 feet.

The most remarkable waterfall of Africa is one with which Dr. Livingstone's missionary travels first made us acquainted. This is a cataract on the Zambesi, called by the natives Mosioatunya ('smoke sounds here'), named by him Victoria Falls. The stream, about 1,860 yards broad, flowing over a bed of basaltic rock, is suddenly precipitated into a tremendous fissure, extending across the bed of the river from the right to the left bank, to the depth of about 370 feet. The breadth of this fissure or crack is only from 80 to 90 yards, and the pent-up waters, from which immense columns of vapor are continually ascending, are then hurried through a prolongation of the chasm to the left with furious violence. The so-called Cataracts of the Nile are not, properly speaking, cataracts. A more correct designation for them would be 'rapids.' The Stanley Falls on the Congo comprise seven cataracts. On the Tugela river in Natal there are the Tugela Falls. On the Umgeni river, in the same country, are the falls of the Great Umgeni (364 feet) and the Kar Kloof Falls (350). There seem to be no waterfalls of more note in Asia than those of the Cavery river of India.

One of the grandest falls in Europe is that of the Ruikanfoss ('smoking fall'), on the Maan river in Norway. The height of the cataract is 805 feet. In Sweden, on the Gotha river, a few miles below its outlet from Lake Wener, are the celebrated falls of Trollhätta, which have a height of over 100 feet. The cascade of Gavarnie, in the Pyrenees, is reputed the loftiest in Europe, being over 1,300 feet high. Its volume of water, however, is so small that it is converted into spray before reaching the bottom of the fall. Another waterfall in the Pyrenees is that of Seculéjo, in the neighborhood of Bagnères-de-Luchon. It descends from the Lac d'Espingo, into the Lac de Seculéjo, or d'Oo, a singularly romantic mountain reservoir, from a height of 820 feet, and is the most copious of the Pyrenean waterfalls. The Swiss Alps likewise contain some falls of great sublimity. At Lauterbrunnen, in addition to numerous other cascades, is the renowned fall of the Staubbach, about 870 feet high, which, however, from its small volume of water, has none of the terrific adjuncts of a cataract, and resembles, in front, a beautiful lace veil suspended from the summit of the precipice. Near Martigny is the picturesque waterfall of the Sellesche or Pissevache, the final leap of the cascade being 128 feet. The falls of the

Rhine at Schaffhausen are renowned over Europe. They are 300 feet broad, and nearly 100 feet high. In Italy the falls of Terni, or the Cascate del Marmore, on the Velino, have been immortalized by Lord Byron, and though artificial, are justly regarded as among the finest and most picturesque in Europe. They consist of three falls, the aggregate height of which may be estimated at 550 feet. The falls of the Anio or Teverone, at Tivoli, are likewise very beautiful. They, too, are artificial, and have a fall of about 80 feet.

CATARHINA, *kăt'ă-rī'nă* [Gr. *kata*, down; *rhinēs*, nostrils]: in *zool.*, a group of the Quadrumana, characterized by twisted or curved nostrils placed at the end of the snout (see MONKEY). CATARHINE, a. *kăt'ăr-īn*, of or belonging to.

CATARRH, n. *kă-târ'* [L. *catarrhus*—from Gr. *kata*, down; *rhĕō*, I flow]: a disease of great frequency in temperate latitudes, especially in changeable, moist climates in the winter, or in the late autumn and early spring. CATAR'RHAL, a. *-răl*, pertaining to. From the well-known connection of this disease with sudden falls of temperature, and other epidemic or atmospheric causes (see INFLUENZA), as also from the chill often experienced at the commencement of the disease, it is popularly called *a cold*—a term quite inappropriate in many cases; while the term catarrh is in popular use restricted to a chronic inflammation of the mucous membrane of the nose and throat attended with a profuse secretion of mucus. A 'cold in the head' is, in scientific language, *coryza*. A 'cold' commonly begins with a feeling of chilliness, which may or may not be attributed to external causes. Sometimes this is absent, there being only a sense of languor and indisposition; not unfrequently there is no unusual sensation until a stuffing is experienced in the nostrils with frequent sneezing, or severe headache, or hoarseness with cough, or oppression of the breathing. The regular form of a cold is to attack the nostrils first—in some cases the throat, and afterward the air-passages leading to the chest. When it habitually attacks the chest, without running through its ordinary course as indicated above, there is often some special cause of delicacy in the lungs, or some constitutional tendency toward consumption (q.v.). The discharge is in the beginning watery, becoming afterward more abundant, glairy, and of yellowish color; the early stages of the disease are attended by considerable irritation of the surfaces affected, and there is frequently a general feeling of prostration.

The treatment of acute catarrh (or 'cold') is commonly simple, so far as the particular attack is concerned. Confinement to the house, and, in severe cases, to bed, or to the sofa, for a day or two; a warm hip or foot bath, to remove the chill; light farinaceous diet, and a dose or two of some gentle laxative, are usually sufficient to subdue the disease. Some persons gain a cure by entire absti-

nence from food. and as much as possible from drink; others by a large opiate, or by a succession of doses of Dover's powder; others by spirit of mindererus and paregoric; some even profess to carry out the popular maxim, 'stuff a cold, and starve a fever,' and maintain, that a good dinner, and a tumbler of whisky or brandy toddy, are the best specifics. That persons recover from colds under all these methods, needs not be denied; but that any violently perturbative or specific practice assists the cure, or shortens the disease, has yet to be proved; and multiplied experience has shown that 'stuffing a cold' is by no means to be commended. In the later stages, however, a more liberal diet than at first, and in some cases even a very cautious allowance of stimulants, afford considerable relief from the feeling of depression that remains for a time on the subsidence of a catarrh. The tendency to this disease, when habitual, and when not dependent on any form of constitutional disorder requiring special means for its cure, is best met by the daily use of the cold bath, with frequent exercise in the open air, and proper ventilation of the sleeping-apartment; also by friction of the skin, and by clothing which, without being oppressive, is comfortably warm. Exposure to draughts or sudden chills, when the surface is perspiring, is to be avoided: but even without such exposure, a close confined or over-heated air habitually breathed in a workshop or bedroom, is one of the most fruitful predisposing causes of the disease.

Catarrh is not confined to the mucous membrane of the respiratory tract, but may attack any of the mucous membranes of the body. In the larynx in children it constitutes what is called catarrhal croup. In the stomach it gives rise to symptoms of acute or chronic indigestion. When it invades the lining membrane of the intestines it causes an attack of acute diarrhea. Catarrh of the ear (*otitis media*) and catarrh of the eye (*conjunctivitis*) are common affections. For an account of the symptoms and course of catarrh of these different regions see the articles treating of the diseases of the respective organs.

Wherever catarrh is located it may be acute or chronic in character. The chronic form may follow an acute attack—usually a series of acute attacks, each one lasting longer than its predecessor, until finally the affection becomes continuous with intervals of amelioration but never of complete freedom. In the chronic form of respiratory catarrh, the peculiar painful discomfort experienced during an acute attack is absent, but the discharge is profuse, tenacious in consistency, and yellowish in color due to the presence of pus in addition to mucus. There are two forms of chronic catarrh of the nose and throat, the *hypertrophic* and the *atrophic*, the latter usually following the former. In hypertrophic catarrh the mucous membrane becomes thickened and the patient suffers from difficulty of breathing through the nostrils and must open the mouth in order to get sufficient air to supply his

respiratory needs. In atrophic catarrh the mucous membrane is thinned and its function is impaired. The discharge is lessened, but crusts form which impede the passage of air. These crusts, if retained, may decompose and give rise to a very disagreeable odor. When this condition becomes pronounced the disease is called ozena (q.v.). Atrophic catarrh of the nasal mucous membrane, if unchecked, often extends through the Eustachian tube to the middle ear, causing incurable deafness. The treatment of catarrh should never be neglected, since the tendency of the disease is to progress. Cleanliness is essential. The patient should, several times a day, sniff up a solution of table salt and water held in the palm of the hand. This will wash away the secretion and crusts and keep the nostrils free. Other medication is however, essential, but this should be entrusted to the medical attendant, since there is no remedy that will be effective in all cases, and the treatment must be varied according to the indications present in each individual patient. Catarrh is often caused by some abnormal formation of the nasal passages, such as hypertrophy of the turbinated bones (see NOSE) or a deviation from the straight line of the septum, and for its cure a surgical operation designed to correct this malformation is necessary.

CATASETUM, n. *kăt'ă-sē'tŭm* [perhaps Gr. *kata*, down, against; L. *sāēta*, a stiff hair, a bristle, a spiny leaf]: an extensive genus of fleshy-stemmed, terrestrial orchids of tropical America, ord. *Orchidācĕæ*—probably so named from the extraordinary crests and projections on the labellum.

CATASTASIS, n. *ka-tăs'tă-sĭs* [Gr. *katastasis*—from *kata*, down; *histemi*, to set]: in *rhet.*, the exordium of a speech; that part in which the speaker sets forth the subject-matter to be discussed, and the order and manner in which it is proposed to be treated; in *med.*, the state or condition of a person; constitution.

CATASTROPHE, n. *kă-tăs'trō-fĕ* [Gr. *katăs'trophē*, an overthrow—from *kata*, down; *strophe*, a turning]: a great calamity; a violent convulsion in nature; a final event; the conclusion of a series of events. CATASTROPHISM, *ka-tăs'-tro-fĭzm*, theory in *geol.*, that violent convulsions or physical revolutions have occurred at successive periods, causing the elevation or subsidence of portions of the globe, and the destruction of large tribes of men or multitudes of animals.

CATAWBA, *ka-taw'ba*, or GREAT CATAWBA: river of North and South Carolina. It rises in McDowell co., N. C., in the Blue Ridge, flows e. through the gold region to Iredell co., turns s. into S. C., and forms the e. boundary of York co. and Chester co.; near Rocky Mount it receives an affluent and changes its name to the Wateree, which, with the Congaree, forms the Santee. The Catawba is abt. 250 m. long; the Wateree 100 miles.

CATAWBA: a light sparkling wine, of rich Muscadine flavor, produced in the neighborhood of Cincinnati. It

is made from a grape called the catawba grape, 'first found growing on the banks of the Catawba river, in Carolina.' This wine, scarcely known in England, is now in extensive use in N. America, where it is gradually superseding the importation of the Rhenish and French sparkling wines, which, in general character, it resembles. The vineyards where the catawba is produced are on the steep and beautiful slopes with southern exposure on the banks of the Ohio river, under the shelter of high hills on the n. The first great grower of the catawba was Nicholas Longworth, an early settler and esteemed and wealthy proprietor in this region, who, embarking in the pursuit less on business considerations than as an enthusiast, succeeded, after patient care and much expense, in producing a wine that in many parts of the United States finds a favor and a price rivalling the choice imported wines. Some of the finer kinds of catawba equal the best champagne in delicacy and purity, but there are numerous inferior American imitations.

CATAWBAS, *ka-taw'baz:* Indian tribe in North and South Carolina, now nearly extinct. In the last c. they occupied six towns on the Catawba river, had 1,500 warriors, fought with the Cherokees, Shawnees, and Iroquois, but were friendly to the whites, helped them against other tribes, and furnished S. C. with troops in the revolutionary war; afterward they leased their lands and removed to the Cherokee country, but returned to a reservation granted them. Peter Harris, a soldier of the revolution, was said to be the last Catawba of pure blood; those now remaining are half-breeds. Gallatin grouped the Catawbas with the Cherokees, Choctaws, Muskogees, and Natchez. Their language is allied to that of the Waccoes, but not to those of Canada whence they were said to have come. 300 of their words, collected by O. M. Lieber, 1856, appeared in vol. ii. of the *Collections of S. Car. Hist. Soc.*, 1858.

CATBALOGAN, *kât-bâ-lō-gân'*, or CADVALONGA, *kâd-vā-lŏn'gâ:* town of the Philippines, cap. of the island of Samar, on a small bay on the w. coast. The houses are mostly constructed of nipa palm, but there are some of stone. Pop. abt. 7,000.

CAT-BIRD (*Turdus felivox*): an American thrush, of the same group with the mocking-bird, which it resembles in vocal powers. It is a bird of passage, making its way northward in spring through Georgia and Carolina as far as Massachusetts. It feeds on fruit and berries of all kinds, worms, and insects; builds a large nest of dry twigs, weeds, etc., without any attempt at concealment, in a bush or tree, often in the immediate vicinity of human habitations, and shows extraordinary boldness in the defense of its young. It has its name from a mewing cry which it utters when annoyed by an intruder approaching too near its nest.

CAT-BOAT: a boat having one mast stepped just abaft the bow and carrying a sail laced to a boom and gaff, re-

sembling a schooner's mainsail. In general cat-boats are very broad in the beam, averaging 1.3. They are usually equipped with a centre-board, which, with the extreme forward position of the mast, enables them to point high into the wind, and makes them remarkably quick in stays. They are principally employed as pleasure craft on the coasts and inland navigable waters of the United States, and are consequently of shallow draft.

CATCH, v. *kăch* [F. *chasser;* prov. F. *cacher*, to hunt—from mid. L. *captārĕ*, to hunt; Ger. *klatsch*, a slap, a clap; Gael. *glac*, to seize]: to seize; to seize suddenly in hunting; to lay hold on with the hands; to arrest; to snatch; to take or receive by exposure, as a cold, or a disease by infection; to take hold, as fire; to insnare; to overtake: N. anything that seizes or holds; the thing caught; a latch; the act of seizing; a sudden advantage taken; a song in parts, in which those singing catch up the strain one after the other at various intervals; a musical composition in the canon style, which originated in England. The words, generally humorous, are intended to be sung in musical parties; and the music is generally for three voices, each voice, as in the canon, taking up the subject at a certain distance after the first has begun. CATCH'ING, imp.: ADJ. apt to catch; infectious. CAUGHT, pp. pt. *kawt*. CATCHER, n. one who. CATCH-PENNY, something worthless; a book published for the public taste, but without value. CATCH-WORD, the word placed under the last line of a page, and made to begin the first line of the next. CATCHING A TARTAR, being caught in the trap one has laid for another; being deceived in the character of the object which has been pursued. CATCHMENT, n. *kăch'mĕnt*, in *engin.*, a space of ground where water may be caught and retained for use. CATCH-DRAINS, or CATCHING-DRAINS, open or covered drains across a declivity to intercept and lead off surface-water. CATCHMENT BASIN or AREA, the whole area by the drainage of which a river is fed; an area or basin of water receiving running streams, but which itself has no outlet to the sea or ocean. TO CATCH THE MEANING, to understand the sense or import. TO CATCH THE EYE, to arrest the attention of one who is looking. TO CATCH UP, to interrupt; to answer suddenly.—SYN. of 'catch, v.': to seize; snatch; grasp; gripe; fasten upon; charm; please; communicate.

CATCH: a short piece of music written generally in three or four parts. It is a sort of short canon, the second voice taking up the theme when the first has completed the first phrase, the third following the second in same manner. These compositions are most frequently of a humorous and bacchanalian character, and have been from Purcell's time very popular in England.

CATCH-FLY, n. *kăch-flī* [*catch* and *fly*]: common English name of several elegant flowering plants of the nat. ord. *Caryophyllaceæ*—as *Silene Armeria, S. Anglica, Lychnis Viscaria,* etc.—which being clammy, in consequence of

a peculiar exudation on the calyx, on the joints of the stem, etc., often prove fatal to insects settling upon them: see LYCHNIS and SILENE. The name is sometimes employed by botanists as a sort of popular equivalent to *Silene.*—*Dionæa muscipula* is sometimes called the Carolina Catch-fly: see DIONÆA.

CATCH-POLL, or CATCH-POLE, n. *kăch′pōl* [*catch* and *poll*, the head: OF. *chacepol*, an officer of taxes—from mid. L. *cachĕpo′lus*, a collector of taxes]: in *England*, a sheriff's officer, or bailiff; a sergeant; one employed to apprehend a person; so called, it is said, because of the custom of catching the victim by the *poll* or head.

CATCHUP, n. *kăch′ŭp*, or CATSUP, n. *kăts′ŭp* [of E. I. origin]: a sauce made from mushrooms; ketchup.

CATE, n. *kāt*, plur. form CATES, *kātz*, more usual; provisions, food, especially delicacies.

CATEAU, LE, *lĕh kâ-tō′*, or CATEAU-CAMBRESIS, *kâ-tō′-kŏng-brā-zē′* or *kŏng-brā-sē′*: town of France, dept. of Nord; on the Selle, 14 m. e.s.e. of Cambrai. Cateau has manufactures of shawls, merinoes, calicoes, and leather; it has also breweries and distilleries. It is noted as the place where, in 1559, the treaty known as that of Cateau-Cambresis was concluded between Henri II. of France and Philip II. of Spain, by which the former monarch ceded to the latter Savoy, Corsica, and nearly 200 forts in Italy and the Low Countries. Pop. 10,500.

CATECHESIS, *kăt-ē-kē′sĭs*, the science which teaches the proper method of instructing beginners in the principles of the Christian religion by question and answer, which is called the catechetical method. Hence catechist and catechize. The art of the catechist consists in being able to elicit and develop the ideas of the youthful mind. This part of religious science was first cultivated in modern times, and Rosenmüller, Daub, Winter, Heinrich, Müller, Schwarz, Palmer, and others, have particularly distinguished themselves by their writings upon it.

CATECHISE, v. *kăt′ĕ-kīz* [id. L. *catechizārĕ*, to catechise—from Gr. *katēchizein*, to instruct; *katēchēsis*, instruction by word of mouth, instruction in the elements of a science—from *kata*, down; *echos*, a sound, hence a resounding]: to instruct or examine by asking questions and receiving answers; to interrogate; to try by asking questions. CAT′ECHISING, imp.: N. the act of instructing by question and answer; interrogation. CAT′ECHISED, pp. *-kīzd*. CAT′ECHISER, n. one who. CAT′ECHISM, n. *-kĭzm*, a book on any subject arranged for instruction in the form of question and answer. CAT′ECHIST, n. one who instructs in the principles of religion; a catechiser. CATECHIS′TIC, a. *-kĭs′tĭk*, or CAT′ECHIS′TICAL, a. *-tĭ-kăl*, imparting instruction by way of question and answer. CAT′ECHET′IC, a. *kĕt′ĭk*, or CAT′ECHET′ICAL, a. after the manner of a catechism. CAT′ECHET′ICALLY, ad. *-lĭ*. CATECHETICAL SCHOOLS, schools of theological instruction in the Christian Church of the

early centuries, among which those at Antioch and Alexandria were famous. CAT'ECHU'MEN, n. *-kū'mĕn*, in the *anc. church*, one not yet fully instructed in the principles of Christianity, but under instruction; one being prepared for baptism.

CATECHISM, *kăt'e-kĭzm:* system of teaching by question and answer; also a book used in such teaching.

Catechisms have long formed one of the principal means employed for popular instruction in the truths and duties of the Christian religion. The composition of the first catechisms was probably suggested by the ordinary oral instruction of catechumens, and was intended for the help both of teachers and of pupils. It appears to have been in the 8th and 9th c. that the first regular catechisms were compiled, of which that by Kero, a monk of St. Gall, and that ascribed to Otfried of Weissenburg, are among the most noted. At later periods, the use of catechisms prevailed chiefly among the opponents of the hierarchy, as among the Waldenses, the Albigenses, the Wickliffites, and, above all, among the Bohemian Brethren. The term catechism appears to have been first used in its present sense among the latter. Early in the Reformation, the reformers began to avail themselves of this method of popular instruction, and their catechisms became important instruments in that great religious movement. In 1520, Luther published his first short catechism. In 1525, Justus Jonas and John Agricola were intrusted with the preparation of a catechism. In 1529, Luther published his Larger and Smaller Catechisms, which found a place among the symbolical books or standards of the Lutheran churches. A number of catechisms were published also by the Swiss reformers, and by those of England and other countries. The Geneva catechisms, Larger and Smaller, were the work of Calvin. They were published 1536, were speedily translated into various languages, and became acknowledged standards of the Reformed churches, not only in Switzerland but in the Low Countries, in France, and in Hungary. The Church of Geneva has set aside the authority of these catechisms. The Zurich catechism is received as a standard in the Church of Zurich. The Heidelberg or Palatinate catechism is of greater importance, however, than any other as a standard of the Swiss Reformed churches. It was compiled by the Heidelberg theologians, Caspar Olevian and Zacharias Ursinus, at the request of the elector Frederic III. of the Palatinate; it was published 1563, was approved by several synods, and was subjected to a revision by the Synod of Dort.—In the Cath. Church the Tridentine catechism is of high authority. It was prepared in accordance with the decrees of the Council of Trent, by Abp. Leon. Marino, Bp. Ægidius Foscorari, and the Portuguese Dominican, Francis Fureiro; revised by Cardinals Borromeo, Sirlet, and Antonian, and sanctioned by Pope Pius V.; published Rome 1566.—The catechism of the Orthodox Greek Church was prepared by

Peter Mogilas, metropolitan in Kiew, and published 1642. It received authority as a standard or symbolical book from a synod at Jerusalem 1672. It is often called the Larger Russian catechism, to distinguish it from the Smaller catechism prepared by order of Peter the Great.—Besides these catechisms, which have historic interest, or are important from their symbolical character, there have appeared at all periods, since the Reformation, many others, Protestant and Rom. Cath., some doctrinal, some controversial, some devoted to particular subjects, as the sacraments, or to particular purposes, as the preparation of candidates for admission to the Lord's Supper, some adapted to the mental capacity of very young children, etc.

The catechism of the Church of England, in its most familiar form, is the smaller one published in the Book of Common Prayer. It is in two parts: the first contains and explains the baptismal covenant, the creed, the ten commandments, and the Lord's prayer; the second explains the two sacraments, baptism and the Lord's Supper. It is not known with certainty who was the author of the first part; probably Cranmer and Ridley had the principal hand in framing the questions and answers. It was originally put forth with 42 Articles in the reign of Edward VI., and condemned as heretical in the reign of Mary. It must not be confounded with Cranmer's catechism, which was a larger work, differently arranged, and translated chiefly from the German catechism used in Nuremberg. This first part of the church catechism is spoken of as the *Shorter* Catechism.

There was a *larger* church catechism compiled also in the reign of Edward VI., by Ponet, as is supposed, and it corresponds in some degree with the smaller work above described. It was afterward revised and enlarged by Noel, dean of St. Paul's, and published 1570; and, though never officially promulated by the church, it has some authority from having been approved by the lower house of convocation. At the Hampton Court Conference, in the reign of James I., the *Shorter* catechism was considered too short, and the larger one of Noel's too long; and accordingly, at the king's suggestion, an addition was made to the former of that explanation of the two sacraments which now forms the second part of the church catechism. This was drawn up by Dr. Overall. The whole is a work much esteemed by all sections of the church as remarkable for its simplicity, truth, and catholicity. It, however, states the baptismal theory in a way not acceptable to the low church party. The rubrics in the Common Prayer Book enjoin the teaching of the catechism in the church on Sundays and holidays after the second lesson at evening prayer, and the 59th canon contains a like injunction, imposing penalties on the clergy who neglect this. The custom of catechising in the church had fallen into almost universal disuse, but in many parishes it has been revived with excellent results.

The Larger and Shorter Catechisms, which, with the Westminster Confession of Faith, constitute the standards or symbolical books of the Presb. churches throughout the British empire and the United States, were compiled by the Assembly of Divines at Westminster (q.v.)—the Shorter Catechism 'to be a directory for catechising such as are of weaker capacity; the Larger 'for catching such as have made some proficiency in the knowledge of the Christian religion.' The Shorter Catechism was presented to the English house of commons, 1647, Nov. 5; the Larger, 1648, Apr. 14, and 1648, July, both received the sanction of the general assembly of the Church of Scotland—the general assembly, in the act approving of the Larger Catechism, declaring it to be a rich treasure for increasing knowledge among the people of God,' and that 'they bless the Lord that so excellent a catechism has been prepared.' The Shorter Catechism has, however, been far more generally used for the purpose of instruction than the Larger, which has been generally felt to be too minute in its statements, and too burdensome to the memory to be employed as a catechism. Even the Shorter Catechism is regarded by many, who substantially adhere to its doctrine, as carrying the statement of dogmatic theology beyond what is proper for elementary instruction, while it has been long felt to be unsuitable for the very young and the very ignorant, and its use is now almost always preceded by that of catechisms more adapted to their capacity. Its influence, however, has been very great in forming the religious opinions, and in exercising and training the intellectual faculties, wherever Presbyterianism has prevailed; for it has been, and still is, in almost universal use among Presbyterians speaking the English language; and in former days had extensive use among Independents or Congregationalists both in Britain and in America; the Congregationalists have now largely discontinued its public or official use. In Holland, also, a translation of it has been much used. It is generally regarded, by those whose doctrinal views are in accordance with it, as an admirable compend of Christian doctrine and duty.—The authorship of the Westminster Assembly's catechisms has been the subject of much debate, or at least the authorship of the first drafts of them, it being admitted that they were prepared with great care by committees of the assembly. But it seems probable that their authorship is to be ascribed entirely to these committees, and that like the Westminster Confession of Faith, they are thus the result of the joint labors of many. From discoveries made by the late Dr. M'Crie it seems probable that at least the plan or scheme of the Shorter Catechism is to be ascribed to Herbert Palmer (1601–47).

CATECHU, n. *kăt'ĕ-shu*, or CUTCH, n. *kŭch* [said to be from Japanese *cate*, a tree, and *chu*, juice]: dry brown extract used both as a coloring matter and medicinally as an astringent. The Catechu of commerce is obtained chiefly from East Indian trees, such as the Catechu tree (*Acacia Catechu*), betel-nut, etc. It is known in India by the name

*Kutt.* Cutch is another form, and is a common commercial name. The aqueous extract of the wood, fruit and leaves is evaporated to a syrup which solidifies on cooling. Cutch is brittle and can readily be broken into fragments; is soluble in water, and possesses an astringent taste, but no odor. It is chiefly employed in cotton dyeing for the production of brown shades, in conjunction with potassium bichromate. It is also used in medicine, in tanning and for coloring fishing nets and sails and rendering them less liable to rot. The chief constituent of Cutch is *catechin*, a white crystalline powder melting at 217° C. KINO (q.v) is sometimes confounded with catechu. *Terra Japonica*, or JAPAN EARTH (see TERRA) is an old name for Catechu, not quite disused, given to it on the supposition of its being an earthy substance from Japan.

CATECHUMENS, *kăt-e-kū'mĕnz* [see CATECHIZE]: In the early Christian Church those converted Jews and heathens who had not yet received baptism, but were under preparatory training and instruction. They had a place assigned in the congregation, but were not permitted to be present at the Lord's Supper. In the apostolic age, converts appear to have been at once admitted to the ordinances; but afterward, with the growth of sacramentarian views, a period of probation was required. The Catechumens were in different classes or grades, according to proficiency; those of the lowest grade were not permitted to be present during the prayers of the congregation; and those only of the highest, and who had been declared fit to be baptized at the next administration of the ordinance, were permitted to witness the Lord's Supper.—The term Catechumens was afterward employed to designate young members of the Christian Church who were receiving instruction to prepare them for the Lord's Supper, and it is still often used in this sense.

CATECHUMENS, HOUSE OF: an institution in Rome for the conversion of Jews, founded by the Vatican, 1548, March 21, and to whose support the Jews were obliged to contribute by certain taxes. Forcible conversions followed in large numbers, often either from fear or for the sake of profit. In later years, when conversions were less numerous, Jews were compelled to listen to sermons against Judaism—a custom that continued until more recent decades. In 1604, the chief rabbi of Rome was obliged to enter the House, called Casa dei Neofiti, with his four children, who were baptized. If voluntary conversions did not follow entrance into the Casa, force was applied, ending in hanging; if baptism were accepted, the government added a sum to the amount derived from the Jewish taxes. The house survived until late in the 18th century. In 1810, the Jewish taxes were abolished: see Abraham's *Jewish Life in the Middle Ages;* Vogelstein und Rieger, *Gesch. der Jud. in Rom.*

CATEGOREMATIC: a word used in logic to designate a term which can stand alone as the subject of a propo-

sition or sentence. Such a word is any noun, any adjective, or any proposition used substantively. Categorematic terms are to be distinguished from syncate-gorematic. The latter can stand as subjects of propositions only when used in company with other words. Prepositions, conjunctions, adjectives used adjectively are syncategorematic. 'Oil' is an example of the one term, 'oily' of the other.

CATEGORICAL IMPERATIVE: an expression employed by the philosopher Kant in presenting what he believes to be the valid claim of conscience to recognition as a supreme and final standard of conduct. Conscience is an *imperative* because it is a law—a law of rational self development through freely chosen conduct. Conscience speaks as having authority. Duty refuses to stoop to mere inclination, and demands that inclination bend to it. Again, as a law, conscience asserts that its deliverances have a true claim to universality and necessity such as are accorded to scientific formulæ. Yet as a moral law, conscience presents its imperative in form, different from that in which ordinary scientific laws appear. Natural law operates blindly and without regard to the worth of its object. Conscience exercises its imperative through a rational appeal to man's intelligent nature. Hence, although the moral law operates as inevitably as natural law, it applies only within the sphere of choice and by means of unveiling to the intelligence of man the basic principles of his normal self-development. Conscience is *categorical* or *unconditioned* inasmuch as it asserts that its judgments of conduct are final and supreme. Virtue, i.e. conscientiously guided volition, is always an end in itself and never a means to anything else. In other words there is nothing in the whole realm of existence that, in value, can be put above a good life or even beside it. The realization of such a life conscience lays upon every rational being as an unconditional obligation. For these reasons the dictates of conscience are best described, according to the opinion of Kant, as categorical imperatives: see KANT.

CATEGORIES, *kăt'e-go-rĭz*, in Logic: a designation that has come down from the time of Aristotle. One of the books of his *Organon* or logical system is so named. The Categories or Predicaments, as the schoolmen called them, are an attempt at a comprehensive classification of all that exists, for the purposes of logical affirmation, proof, or disproof. The entire universe may be classified in various ways—as into things celestial and terrestrial; into matter and spirit: into organized and unorganized; into minerals, plants, animals, etc. But the classification contemplated under the Categories proceeds on the very general properties or attributes that most extensively pervade all existing things, although in unequal degrees. A good example of such properties is quantity, which pertains to everything that we know or can think of. Below is the Aristotelian enumeration—the first column is the original Greek; the

second, the Latin rendering of the schoolmen; the third, the nearest corresponding English words:

| | | |
|---|---|---|
| Οὐσία, | Substantia, | Substance. |
| Ποσόν, | Quantitas, | Quantity. |
| Ποιόν, | Qualitas, | Quality. |
| Πρός τι, | Relatio, | Relation. |
| Ποιεῖν, | Actio, | Action. |
| Πάσχειν, | Passio, | Passivity. |
| Ποῦ, | Ubi, | Position in Space. |
| Πότε, | Quando, | Position in Time. |
| Κεῖσθαι, | Situs, | Situation. |
| Ἔχειν, | Habitus, | Possession. |

John Stuart Mill has the following remarks on the above scheme: 'The imperfections of this classification are too obvious to require, and its merits are not sufficient to reward, a minute examination. It is a mere catalogue of the distinctions rudely marked out by the language of familiar life, with little or no attempt to penetrate, by philosophical analysis, to the *rationale* even of these common distinctions. Such an analysis, however superficially conducted, would have shown the enumeration to be both redundant and defective. Some objects are admitted and others repeated several times under different heads. It is like a division of animals into men, quadrupeds, horses, asses, and ponies. That, for instance, could not be a very comprehensive view of the nature of relation, which could exclude action, passivity, and local situation from the category. The same observation applies to position in time and position in space, while the distinction between the latter and situation is merely verbal.'—*Logic*, book i., chap. iii., §. 1. While these remarks of Mill are essentially just, it is none the less true that Aristotle was at work upon a vital problem and one that modern philosophy has but emphasized and deepened. For inasmuch as science in its devotion to the study of concrete facts and their laws overlooks the great general principles and features of its world, metaphysics has been driven to undertake this study for itself. Only in this manner can the background and perspectives of the masses of scientific facts be determined. These underlying principles which show themselves everywhere in the concrete natures of things are known by the name of categories when we seek to classify them, to discover their inner characteristics, and to relate them one to another into some definite system. That the earlier descriptions of them should be somewhat crude and meagre was a thing inevitable because of the simpler character of man's life and his knowledge of his world. As human knowledge penetrated more fully into the secrets of its environment the demand for an increasing number of categories and for a more exact and complete account of them became insistent. That a critical inquiry into first principles is not to be avoided either by science or philosophy was made quite plain by the immortal work of Kant. He too furnishes us with a list of first principles. They are the following: 1. Quantity, including unity, multiplicity, totality;

2. Quality, including reality, negation, limitation; 3. Relation, including substance and accident, cause and effect, action and reaction; 4. Modality, including possibility, existence, necessity. If one takes the four main categories into consideration he sees at once how important the problem contained in them is, and how immediately related it is to science. For it is self-evident that our scientific forms of classifying facts lead ultimately into their division into phenomena of quantity or of quality. Again, all facts subsist in relation one to another and are interdependent or modal in a single system or whole. Kant's categories are simply an overt recognition of four fundamental ways of describing the world which is common to the everyday man, the scientist, and the philosopher. This fourfold view breaks up into as many different sub-categories as there are minor points of view and minor principles discriminated by experience or by science. Of these Kant designated 12 which have played an important part each of them in modern conceptions of the world. A very elaborate inventory of the categories was made by Hegel, and a persistent endeavor also made to analyze them thoroughly. Since his day both philosophers and scientists have been working upon the same problem perhaps with more completeness of detail, inasmuch as science has developed marvellously during the past century. They, however, have shown a considerably less thorough grasp of the necessity for understanding the precise relationships of the categories one to another, and of obtaining by means of their organization a thoroughly systematized insight into the general nature of the world.

In ordinary parlance, category means any general classification of things. To understand to what category anything belongs is to know how to classify it.

CATEGORY, n. *kăt'ĕ-gŏr-ĭ* [Gr. *kategŏrĭă*, an accusation —from *kata*, against; *agoreuō*, I speak in an assembly]: in *logic*, the general head of a class, to one among a certain number of which anything whatever is referable; a class; an order of ideas (see CATEGORIES); predicament. CATEGORIC, a. *kăt'ĕ-gŏr'ĭk*, or CAT'EGOR'ICAL, a. *-ĭ-kăl*, absolute; positive; direct; without possibility of evasion. CAT'EGOR'ICALLY, ad. *-lĭ*. CAT'EGOREMAT'IC, a. *-ĕ-măt'ĭk* [Gr. *kategŏrēma*, a predicate]: in *logic*, capable of being employed by itself as a term; also CAT'EGOR'EMAT'ICAL, *-ĭ-kăl*. CAT'EGOREMAT'ICALLY, ad. *-lĭ*.—SYN. of 'category:' state; situation; predicament; condition.

CATEL, *kâ'tĕl*, FRANZ: German artist: b. Berlin, 1778, Feb. 22; d. Rome, 1856, Dec. 19. His earliest efforts were designs for illustrated almanacs. He then painted in oil and water colors, and took up his abode in Rome in 1812. Overbeck, Schadow, and Cornelius gave him much encouragement, and he painted historical and genre pieces and landscapes, in which last-named department of his art he was especially successful. During a residence in Sicily, about the year 1818, he painted a large number of

views of Mount Ætna, and other prominent places on the island. He died rich, directing his fortune to be invested for the benefit of poor artists.

CATENA, n. *kăt'ē-na* [L. *catena*, a chain]: a chain or series of things connected with each other; in *music*, a chain, or succession, of short instrumental shakes.

CATENATE, v. *kăt'ĕ-nāt* [L. *catēna*, a chain]: to connect, as a series of links in a chain. Cat'enating, imp. Cat'enated, pp. Cat'ena'tion, n. *-nā'shŭn*, regular connection, as the links of a chain. Cat'enary, a. *-nėr-ĭ*, relating to a chain; also Cat'ena'rian, a. *-nā'rĭ-ăn*; Catenulate, a. *kă-tĕn'ū-lāt*, put together like the links of a chain.

CATENARY: the curve formed by a flexible homogeneous cord hanging freely between two points of support, and acted on by no other force than gravity. If the cord is not homogeneous, and the density varies in any regular way, the cord hangs in a curve slightly different from the ordinary catenary. The catenary possesses several remarkable properties, one of which is that its centre of gravity (q.v.) is lower than that of any curve of equal perimeter, and with the same fixed points for its extremities. Where the cord is such that the weight of any part of it is proportioned to its horizontal projection, the curve is a parabola (q.v.). The latter curve and the ordinary catenary are of importance chiefly in the theory of suspension bridges (q.v.). For the properties of the catenary curve, fully analyzed, see the leading works on mechanics. Consult Price, *Analytical Mechanics*, Vol. I, (Oxford 1868); Minchin, *Treatise on Statics*, (Oxford 1880); Brocard, *Notes de bibliographie des courbes géométriques* (Bar-le-duc 1897).

CATENIPORA, n. plu. *kăt'ĕn-ĭp'ŏ-ră*, or Catenipores, n. plu. *kă-tĕn'ĭ-pōrs* [L. *catēna*, a chain; *pŏrus*, a channel, a pore]: genus of fossil lamelliferous corals peculiar to Palæozoic strata; easily recognized. The cells are terminal and oval, arranged like a loose network of chains, hence called 'chain coral,' or 'chainpore coral.' Vertical anastomosing lamellæ united the cells together, and formed a hemispherical polypidom, sometimes of great size.

CATER, v. *kā'tėr* [Norm. F. *acater*, to buy; *acat*, a purchase: F. *acheter*, to buy; *achat*, a purchase; It. *accattare*, to acquire, to get; mid. L. *accaptārĕ*, to purchase—from L. *accipĕrĕ*, to receive, to take to one's self]: to provide food; to purchase provisions. Ca'tering, imp. Ca'tered, pp. *-tėrd*. Caterer, n. *kā'-tėr-ėr*, the person who seeks out and provides the provisions. Ca'teress, n. fem. Catery, n. *kā'tėr-ĭ*, in *OE.*, the store room where provisions were kept.

CATERAN, n. *kă'tėr-ăn* [Ir. *ceatharnach*, a soldier; Gael. *ceathairneach*, a freebooter, a robber; *cath*, a battle; W. *cedyrn*, strong or mighty ones]: in *Scot.*, a Highlander

who came down from the hills to plunder in the Lowlands; a kern.

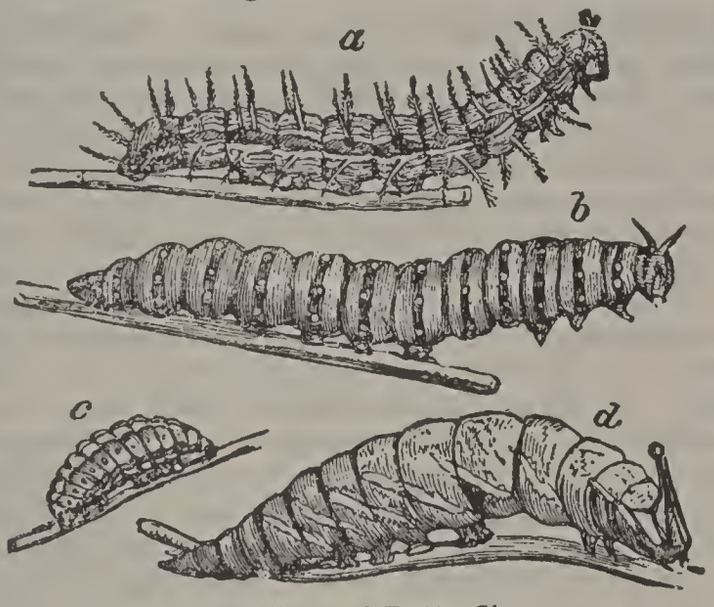
CATERCORNERED, a. *kăt'ĕr-cŏr-nerd:* placed diagonally.

CATER-COUSIN [F. *quatre,* four]: in *OE.,* a cousin in the fourth degree; an intimate friend.

CATERINA, *kât-ā-rē'nâ,* SANTA: town of Sicily, province of Caltanisetta, 7 m. n.n.w. of the town of Caltanisetta. It is on a hill near the river Salso, is fortified, has manufactures of fine earthenware, and in the neighborhood are found jaspers and agates of good quality. Pop. 5,800.

CATERPILLAR, n. *kăt'ėr-pĭl'lėr* [OE. *cates,* food; F. *piller,* to plunder. *Note.*—Skeat suggests OF. *chate,* a she-cat; and CF. *pelouse;* It. *peloso,* hairy—from L. *pilōsus,* hairy—thus signifying 'a hairy she-cat;' it may perhaps have been named from its resemblance to the *catkins* of a nut]: name given to the larvæ of lepidopterous insects— butterflies, moths, and hawk-moths. Caterpillars exhibit as great differences as subsist among the perfect insects into which they change; and the family, genus, and species may be determined by the characters of the C. as well as of the perfect insect. Their body is generally long, nearly cylindrical, soft, and consisting of twelve rings or segments besides the head, with nine spiracles or small openings for respiration on each side. The head is much harder than the rest of the body, of almost horny substance, and has six small shining points on each side, regarded as simple or *stemmatic* eyes, and is also furnished with two very short rudimentary antennæ. The mouth is adapted for tearing, cutting, and masticating the substances on which the C. is destined to feed, which are very various in the different species, although in all extremely different from the food of the perfect insect; it is provided with two strong *mandibles,* or upper jaws; two *maxillæ,* or lower jaws; a *labium,* or lower lip; and four *palpi,* or feelers. In the mouth also is situated the *spinneret* of those species which, when they change into the chrysalis or pupa state, envelop themselves in silken cocoons: see SILK-WORM. The first three segments of the body are each furnished with a pair of feet, which are hard and scaly, and represent the six feet of the perfect insect; some of the remaining segments also are furnished with feet, varying in all from four to ten in number, the last pair situated at the posterior extremity of the body; but these feet are soft and membranous or fleshy, and armed at their extremity with a sort of circlet of minute hooks. All the feet or legs are very short. Those caterpillars in which the *prolegs,* as they are sometimes called, or supplementary soft feet, are nearly equally distributed along the body, move by a sort of regular crawling motion; but those which have only four such feet, situated near the posterior extremity, move by alternately taking

hold by what may be called their fore-feet and their hind-feet, now stretching the body out to its full length, and now bending it into an arch, while the hinder part is brought forward almost into contact with the forepart. Caterpillars which move in this way are called *geometers* or *loopers*. Some caterpillars have the power of fixing themselves by the two hind feet to a twig, and stretching themselves out as straight as a rod, so that, being in color




Caterpillars of Butterflies.
*a*. silver-washed fritillary; *b*, swallow-tailed; *c*, chalk-hill blue; *d*, purple emperor.

very like a twig of the tree on the leaves of which they feed, they are not readily observed. The muscular power required for this position of rest is very great, and Lyonnet found the number of muscles in a C. to be more than 4,000. The skin of some caterpillars is naked, that of others is covered with hairs, spines, or tubercles. Some make for themselves nests or tents of silk, under which they dwell in societies, protected from the inclemency of the weather. Many construct cases or sheaths by agglutinating various substances together, as the C. of the common clothes-moth. Some roll together leaves, and fix them by threads, so forming a dwelling for themselves; and a few burrow and excavate galleries in the substance of leaves. Many feed on leaves, many being limited to a particular kind of plant, or to a few nearly-allied plants. Some feed on flowers, some on seeds, some on roots, and some even on the woody portions of stems; some on wool, hides, furs, and other animal substances; a few on lard, and other kinds of fat. The admirable harmony pervading all nature is illustrated in the adjustment of the time of each kind of C.'s appearance to that of the leaf or flower on which it is to feed.

CATERPILLAR-CATCHER: a bird belonging to the Shrike family, living mainly on caterpillars; a sub-family of *Ampelidæ* (Chatterers), found chiefly in the warmer parts of the eastern hemisphere, though one genus is American.

CATERWAUL, v. *kăt'ẽr-wawl'* [from *cat*, and *waul*, to cry as a cat]: to make a noise, as cats at night under the influence of the sexual instinct; to make a harsh, disagreeable noise. CAT'ERWAUL'ING, imp.: N. a loud, disagreeable noise made by cats. CAT'ERWAULED, pp. *wawld.*

CATES, n. plu. *kāts* [said to be a mere abbreviation of *delicates* or delicacies (see CATER)]: dainties; cakes; nice food.

CAT-FISH, *kăt'fĭsh:* of the family *Siluridæ*, genus *Pimelodus;* marked by a slimy skin without scales, and eight fleshy barbules on the head. Some 50 varieties exist, and 16 or more in the inland waters of the United States. The commonest is the horned pout or bullhead, *P. atrarius,* which has sharp spines adjoining the pectoral fin; these it can stiffen at will into a formidable weapon. This species is small, but much used for food. Another variety, *P. pimapterus,* familiar in the e. and middle states, has no ventral fins. Larger species are found in the lakes, *P. nigricans* and *P. cænosus;* in the n. *P. borealis;* in Del., *P. albidus;* in La., *P. punctulatus;* and under various names in the Ohio and Mississippi, where they are sometimes found six ft. in length and in weight 100 to 200 lbs. They are all sluggish in movement and fond of muddy bottoms. Akin to these fresh-water species, and superior to them for food, is the sea-catfish, *Galeicthys Marinus.*

CAT'GUT: material prepared usually from the the intestines of the sheep, rarely from those of the horse, ass, or mule, and *not* from those of the cat; used for strings of violins, harps, guitars, and other musical instruments; as also in the cords used by clock-makers, in the bows of archers, and in whip cord. The first stage in the operation, is the thorough cleansing of the intestines from adherent feculent and fatty matters, after which they are steeped in water for several days, so as to loosen the external membrane, which can then be removed by scraping with a blunt knife. The material which is thus scraped off is employed for the cords of battledoors and rackets, and also as thread in sewing the ends of intestines together. The scraped intestines are then steeped in water, and scraped again, when the large intestines are cut and placed in tubs with salt, to preserve them for the sausage-maker; and the smaller intestines are steeped in water, thereafter treated with a dilute solution of alkali (4 oz. potash, 4 oz. carbonate of potash, and three to four gallons of water, with occasionally a little alum), and are lastly drawn through a perforated brass thimble, and assorted into their respective sizes. In order to destroy any adherent animal matter, which would lead to putrefaction, and the consequent development of offensive odors, it is customary to subject the C. to the fumes of burning sulphur—sulphurous acid, which acts as an antiseptic (q.v.), and arrests decomposition. The best strings are used for musical instruments; and those which come from Italy, and are known as *Roman strings,* are strongest. They are remarkable for clearness and transparency.

Cord for clockmakers is made from the smallest of the intestines, and occasionally from larger ones, which have been split longitudinally into several lengths. Whip-cord is fabricated from C. which has been twisted in a manner somewhat similar to single-corded ropes. The C. obtained from the intestines of horses, asses, and mules is made principally in France, and is used instead of leather-belts for driving machinery.

CATHA, *kăth'a:* genus of the nat. ord. *Celastraceæ*. The fruit is a three-cornered capsule.—*C. edulis*, sometimes called Arabian Tea, the Khât of the Arabians, is a shrub with erect, smooth branches, elliptical, obtusely-serrated leaves, and small flowers in axillary cymes. It is a native of Arabia, and the Arabs ascribe to its leaves, even carried about the person, extraordinary virtues as a preventive of plague, with probably about as much reason as our forefathers had for esteeming the rowan tree formidable to witches. When fresh, they are stimulant, narcotic, and intoxicating, and are eaten with greediness by the Arabs. They are very antisoporific, so that a man, after using them, may keep watch for a whole night without drowsiness.

CATHARI, *kăth'a-rī*, or Catharists, *kăth'a-rĭsts* [Gr., pure]: name of various sects in the church during the middle ages; sometimes assumed in profession of a purity of doctrine and morals superior to that prevalent in the church, sometimes bestowed ironically in ridicule of such a profession, and perhaps first used as a designation of the Paulicians (q.v.). It became a common appellation of sects which appeared in Lombardy in the beginning of the 11th c., and afterward in France and the w. of Germany. Having some connection with the Bulgarian Paulicians, they were sometimes called *Bulgarians;* sometimes also *Patarenes* or *Patarines*, sometimes *Publicans* or *Popelitans*, and in the low countries, *Piphles*. The names *Albigenses* and C. are often used as equivalent to one another; but we are under the disadvantage of having to depend entirely on the writings of very bigoted adversaries for our knowledge of their doctrines and practices, and considerable obscurity rests on all this interesting part of ecclesiastical history. Manichæism, Gnosticism, and Montanism are ascribed to the C.; but there is much reason to think that the errors of a few were often indiscriminately charged upon all, and that such charges indeed sometimes rested on ignorant or wilful misconstruction. It appears certain, that the C. differed considerably in their doctrines and in the degree of their opposition to the dominant church. Some of them advocated and practiced a rigid asceticism. There is no good evidence that any of them nearly approached to the doctrines of the Reformation; though in their rejection of tradition, of the authority of Rome, of the worship of saints and images, etc., there are notable points of agreement with the views of the reformers.

CATHARINA, *kăth-a-rē'na*, Saint: a virgin, said to have been of royal descent in Alexandria, who, at 18 years of age, publicly confessing the gospel at a sacrificial feast

appointed by the emperor Maximinus, was put to death in 307, after being tortured on a wheel. Hence the name 'St. Catharine's wheel.' Very extraordinary legends exist as to her coverting 50 philosophers sent by the emperor to convert her in prison, besides a multitude of other persons; the conveyance of her head by the angels to Mount Sinai, etc. She is the patron saint of the philosophical faculty of the Univ. of Paris, and is regarded as the patroness of girls' schools. Her day is Nov. 25, or, as some say, Mar. 5.

CATHARINA OF SIENA, Saint: 1347-1380, Apr. 29; daughter of a dyer: one of the most famous saints of Italy. She practiced extraordinary mortifications, and was said to have received extraordinary tokens of favor from Christ, whose five wounds were impressed upon her body, etc. She became a Dominican, and therefore afterward a patron saint of the Dominicans. Catharina was canonized 1461; her day is Apr. 30. She wrote devotional pieces, letters, and poems, which have been more than once printed the best edition appeared at Siena and Lucca 1707-13, 4 vols. 4to, *Opere della serafica Santa Catarina.*

Other saints named *Catharina*, of the Roman calendar, are: Catharina of Bologna, 1413-1463, Mar. 9; canonized 1724. Catharina of Genoa, 1447-1510, Sep. 14; canonized 1737; revered for rapt and devout piety of the mystical type (see her life by Upham, *Life of Catharina Adorna*, New York, 1856). Catharina of Sweden, 1331-1381, Mar. 24; canonized 1474 (day Mar. 22). Catharina Ricci, 1522-1589, Feb. 2; canonized 1746.

CATHARINE, *kăth' ĕr-ĭn*, I.: Empress of Russia (originally by name Martha Rabe): 1682-1727, May 20; posthumous daughter of John Rabe, a Swedish quartermaster in Livonia. Her mother died when Catharine was but three years old. Left helpless and destitute, a parish-clerk took compassion on her, and supported her, and a Lutheran clergyman in Marienburg afterward received her into his house as an attendant on his children. In 1701, she married a Swedish dragoon, who next year was called to active service; and Marienburg being taken by the Russians, she became for some time the mistress of General Bauer; and afterward entering the service of the Princess Menchikoff, she attracted the notice of Peter the Great. In 1703, she went over to the Greek Church, and took the name of Catharina Alexiewna. After being for some years the emperor's mistress, she was privately married to him 1711; the marriage was publicly avowed 1712; she was proclaimed empress 1718, and was crowned at Moscow 1724. She bore eight children to the emperor, all of whom died in childhood, except two daughters, Anne and Elizabeth, the latter of whom was afterward empress of Russia, and the former married the Duke of Holstein, and was the mother of the emperor Peter III. When Peter the Great and his army seemed entirely in the power of the Turkish army on the Pruth in 1717, Catharine, who was with him, sought an interview with the grand vizier, and, by employing her jewels to bribe his attendants, succeeded in procuring the deliver-

ance of the Russians. Her conduct on this occasion excited so much admiration and gratitude in the emperor, that he resolved to appoint her his successor. Yet in the end of the year 1724, she became the object of his displeasure and suspicion, on account of an alleged intimacy with a chamberlain, whom he caused to be beheaded. Menchikoff, who had always been attached to her interests, was at this time in disgrace. But she had contrived in a great measure to recover her position, when, 1725, Jan. 28, Peter the Great died. His death was kept secret as long as possible, that everything might be arranged for her taking possession of the throne, and the Abp. of Pleskow came forward and declared before the troops and people that the emperor, on his death-bed, had declared her alone worthy to be his successor. The hostility and hesitation of the nobles were at once overcome and Catharine was acknowledged as empress and sole ruler of all the Russias. Under Menchikoff's direction the affairs of the government went on well enough for a time, but the empress ere long began to yield to the influence of a number of favorites, addicted herself to drunkenness, and lived such a life as could not fail to hurry her to the grave. Her death, however, came unexpectedly soon.

CATHARINE II., Empress of Russia: 1729, Apr. 25—1796, Nov. 9; b. Stettin, dau. of the Prince of Anhalt-Zerbst, a Prussian field-marshal, and gov. of Stettin. She received the name of Sophia Augusta; but the empress Elizabeth of Russia, having selected her for the wife of her nephew and intended successor, Peter, she passed from the Lutheran to the Greek Church, and took the name of Catharina Alexiewna. In 1745 her marriage took place. She soon quarreled with her husband, and each of them lived a life of unrestrained vice. Among his attendants was a Count Soltikow, with whom her intimacy soon became scandalous; and Soltikow was sent on an embassy abroad. But the young Polish count Stanislaus Poniatowski, almost immediately supplied his place. After the death of the empress Elizabeth 1761, Peter III. ascended the Russian throne; but the conjugal difference became continually wider. Catharine was banished to a separate abode; and the emperor seemed to entertain the design of divorcing her, of declaring her only son, Paul, illegitimate, and of marrying his mistress, Elizabeth Woronzow. The popular dislike to Peter, however, rapidly increased; and at length he was dethroned by a conspiracy, and Catharine was made empress. A few days afterward, Peter was murdered (1762, July). What participation his wife had in his murder has never been well ascertained.

Catharine now exerted herself to please the people, and among other things made a great show of regard for the outward forms of the Greek Church, though her principles were, in reality, those of the infidelity then prevalent among the French philosophers. The government of the country was carried on with great energy; and her reign was remarkable for the rapid increase of the extent and power of Russia. Not long after her accession to the throne,

her influence secured the election of her former favorite, Stanislaus Poniatowski, to the throne of Poland. In her own empire, however, discontentment was seriously manifested, the hopes of the disaffected being centred in the young prince Ivan, who was forthwith murdered in the castle of Schlüsselburg. From that time the internal politics of Russia long consisted in great part of court intrigues for the humiliation of one favorite and the exaltation of another. The first partition of Poland in 1772, and the Turkish war which ended in the peace of Kainardji 1774, vastly increased the empire. The Turkish war ending in the peace of Jassy 1792, had similar results, and also the war with Sweden, which ended 1790. The second and third partitions of Poland, and the incorporation of Courland with Russia, completed the triumphs of Catharine's reign. She began a war with Persia, however, and cherished a scheme for the overthrow of the British power in India; but was cut off by a stroke of apoplexy. She was a woman of great ability but utterly devoid of principle; she shrank from no crime, and sensuality and ambition governed all her actions. She was shameless in vice, and always had a paramour who dwelt in her palace, and might be regarded as filling an acknowledged office of state, with large revenues and determinate privileges. Yet distinguished authors flattered her, and she invited to her court some of the literati and philosophers of France. She was ever ready to commence great undertakings but most of them were left unfinished, and little was really accomplished in her reign for the improvement of the country or the progress of civilization. On a visit to the southern provinces of the empire 1787, she was gratified by a perpetual display of fictitious wealth and prosperity along the whole route. This imperial progress was also a triumphal procession of her vile favorite Potemkin (q.v.).

CATHARINE DE' MEDICI, *dā mĕd'e-chē*, Queen of Henri II. of France: 1519-1589, Jan. 5; b. Florence; daughter of Lorenzo de' Medici, Duke of Urbino. In her 14th year she was brought to France and married to Henri, second son of Francis I. The marriage was a part of the political schemes of her uncle, Pope Clement VII., but as he died soon afterward she found herself friendless and neglected at the French court. In these circumstances she conducted herself with a submission which seemed to indicate a lack even of proper spirit, but which gained her the favor of the old king, and in some measure also of her husband. It was not till the accession of her eldest son, Francis II., 1559, that her love of power began to display itself. The Guises at this time possessed a power which seemed dangerous to that of the throne, and Catharine entered into a secret alliance with the Huguenots to oppose them. On the death of Francis II., 1560, and accession of Chalres IX., the government fell entirely into her hands. Caring little for religion in itself, though she was prone to superstition, she disliked the Protestants, chiefly because their principles were opposed to the abso-

lute despotism which she desired to maintain. Yet she sought to rally the Protestant leaders around the throne, in order to remove the Guises. This attempt having failed, and the civil war which ensued having ended in the peace of Amboise, highly favorable to the Protestants, she became alarmed at the increase of their power and entered into a secret treaty with Spain for the extirpation of heretics, and subsequently into a plot with the Guises, in which at first only the murder of the Protestant leaders was contemplated, but which resulted in the fearful massacre of St. Bartholomew's Day. This event brought the whole power of the state into the hands of the queen-mother, who boasted of the deed to Rom. Cath. governments and excused it to Protestant ones, for she now managed all the correspondence of the court. About this time she succeeded, by gold and intrigues, in procuring the election of her third son, afterward Henri III., to the Polish throne. But her arbitrary and tyrannical administration aroused the opposition of a Rom. Cath. party, at the head of whom was her own fourth son, the Duke of Alençon, who allied themselves with the Protestants. It was very generally believed that she was privy to the machinations that led to the duke's death. When, after the death of Charles IX., Henry III. returned from Poland to be king of France, his mother still ruled the court and had the principal share in all the intrigues, treacheries, and political transactions of that woeful period. Having betrayed all who trusted them she and her son found themselves at last forsaken and abhorred by all. The league and the Guises had no more confidence in them than had the Protestants and Henri of Navarre. Vexation on this account preyed on the proud heart of the queen-mother in her last days, and amid the confusion and strife of parties she died at Blois, unheeded and unlamented. Her ruling passion was ambition, and to this she was ready to sacrifice everything. Her unprincipled policy had almost subverted the French monarchy; her extravagance and luxury exhausted the finances of the country. Her influence was powerful in increasing the demoralization of the court and of society. She unscrupulously employed beauties of her train to corrupt men from whose power she apprehended danger.

CATHARINE OF ARAGON, Queen of England: 1485; Dec.—1536, Jan.; first wife of Henry VIII., fourth daughter of Ferdinand and Isabella, king and queen of Castile and Aragon. She has a prominent place in English history, not for what she herself was, but for what she was the occasion of—the Reformation. Married, when scarcely 16, to Arthur, Prince of Wales, son of Henry VII., she was left a widow within a year, and in the course of a few months more a second marriage was projected for her by her father-in-law, with his second son Henry, as yet a boy of only 12 years old. The pope's dispensation enabling such near relatives to marry was obtained 1503, and the marriage took place 1509, June, immediately after Henry's

accession to the crown as Henry VIII. Although Henry was very far from being a model husband he appears to have treated Queen Catharine, who had borne him several children, with all due respect until about 1527, when he conceived a passion for Anne Boleyn (q.v.). He now expressed doubts as to the legality of his marriage, and set about obtaining a divorce. Pope Clement VII. would readily have annulled the marriage permitted by his predecessor had he not feared Queen Catharine's powerful nephew, the emperor Charles V. He, however, granted a commission to Campeggio and Wolsey, to inquire into the validity of the marriage; but before these prelates Queen Catharine refused to plead, and appealed to the pope. The king craved judgment. The legates cited the queen, and, declaring her contumacious when she appeared not, went on with the cause, but the wily Campeggio, anxious only for time for his master when the king expected an answer, prorogued the court until a future day. The king consulted the universities of Europe, many of which declared the marriage invalid. The pope now summoned the king to Rome, but Henry haughtily refused to appear, either himself or by deputy, which he maintained would be to sacrifice the prerogatives of his crown, and, setting the pope at defiance, married Anne Boleyn. Cranmer shortly afterward (1533) declared the first marriage void, and Pope Clement annulled Cranmer's sentence, making the separation from Rome complete. Queen Catharine did not quit the kingdom, but took up her residence first at Ampthill, Bedfordshire, afterward at Kimbolton Castle, Huntingdonshire, where she led an austere, religious life until her decease. Queen Catharine's personal character was unimpeachable, and her disposition gentle.

CATHARINE OF BRAGANZA, *kath'er-ĭn ov brâ-gân'zâ:* Queen of Charles II. of England: 1638-1705, Dec. 31; b. Villa Viçossa, Portugal. Her father, John, Duke of Braganza, was rightful heir to the Portuguese throne, and finally attained it after years of war. To secure an ally against Spain, her mother planned this marriage while Charles was yet in exile. It was arranged after the restoration, Portugal to give £500,000 dowry, with the towns of Tangier and Bombay, and many privileges of trade with the colonies. They were married at Plymouth, 1663, May 13, and the king expressed satisfaction with his bride; but she had been religiously trained, and could not adapt herself to dissolute manners. Charles brought his mistress, Lady Castlemaine, to court, and, when the queen showed indignation, directed Clarendon to lecture her on the duty of submission. Her spirit was broken by open neglect and repeated humiliations, and as a Rom. Cath. she was exposed to suspicion and slander during the popery panic; the commons even entertained accusations against her. England, however, rendered her father decisive aid in the struggle with Spain. Catharine had no children, lived retired under James II., returned to Portugal 1692, and showed much ability as regent for her brother Dom Pedro in the war with Spain, 1704.

CATHARINE OF VALOIS, *vâl-wâ'*, or OF FRANCE, Queen of Henry V. of England: 1401, Oct. 27—1437, Jan. 3: b. Paris; dau. of Charles VI. of France and Isabeau of Bavaria. Her father in one of his lucid intervals separated his children from their abandoned mother, who neglected them shamefully. Catharine was educated in a convent. Henry V., on coming to the throne 1413, demanded her hand with a large dowry and restitution of the provinces claimed by England. This proposition was declined, but Henry's invasion and success at Agincourt and Rouen brought the court, with Philip of Burgundy at its head, to another mind. The treaty of Troyes, 1420, May 21, made Henry regent of France and successor to the throne. He married Catharine June 2—affection, according to Shakespeare and the traditions, entering into the match as well as policy. Catherine was crowned at London 1421, Feb. 24, and Henry VI. was b. at Windsor, Dec. 6, and proclaimed king at his father's death in France, 1422, Aug. 31. Within a few years Catharine privately married Owen Tudor, who had been a squire of Henry V. and was her clerk of the wardrobe. He was of good Welsh family but low position, and the union, though it produced three sons, was long kept secret; its detection exposed Catharine to disgrace and trouble which probably contributed to her death at Bermondsey abbey. Tudor was sent to Newgate but escaped; their eldest son became Earl of Richmond, married Margaret Beaufort, heiress of the house of Somerset, and was father of Henry VII. and ancestor of the Tudor line.

CATHARINE PARR, sixth wife of Henry VIII.: 1513–48; daughter of Sir Thomas Parr. Married first to Lord Burgh, afterward to Lord Latimer, she, 1543, July 12, became queen of England by marriage with Henry VIII. She was distinguished for her learning and her knowledge of religious subjects, her discussion of which with the king had well-nigh brought her to the block, like so many of her predecessors. Her tact, however, saved her and brought rebuke on her enemies; for she made it appear, to the king's vanity, that she had only engaged him in discourse about the Reformation in order to derive profit from his majesty's speech. She persuaded Henry to restore the right of succession to his daughters, and interested herself on behalf of the universities. After Henry's death she married, 1547, Sir Thomas Seymour, and died the following year, not without suspicion of poison.

CATHARINE'S, SAINT, COLLEGE, or HALL, Cambridge: founded by Robert Wodelarke, provost of King's College, 1473, for a master and three or more fellows. The visitors sent down to the university by Edward VI. ordered that there should be then six fellows, and in future a greater or less number as the revenues permitted. The statutes confirmed 1860, May, provide that the

shall be a master and nine fellows. There are 25 scholars. Edwyn Sandys, Abp. of York, Bp. Overall, and Bp. Sherlock, were of this college.

CATHARSIS, *ka-thär'sis* [Gr. *katharsis*, purification, purgation; *kathairein*, cleanse, purify]: (in aesthetics) Aristotle's term to denote the effect of tragedy and of some kinds of music upon the hearer. The term appears in a definition of tragedy in the *Poetics*. 'Tragedy, then, is an imitation of an action . . . .; through pity and fear effecting the proper purgation of these emotions.' Aristotle's explanation of the catharsis through pity and fear is wanting, but many interpretations have since been proposed. Among them, (1) the view that the proper purgation of emotion is a refinement of emotion itself. The beholder of a tragedy has the emotions of pity and fear aroused by the magnitude of the sufferings there portrayed, and in this disinterested excitement, the selfish and impure elements of these passions are burned away. Art is thus a kind of discipline for the emotions. Lessing was an exponent of this idea. (2) Another view has it that catharsis is a purification of the soul from the emotions. Pity and fear are undesirable emotions, and to excite them through tragedy, and so induce their discharge, is a relatively harmless way to get rid of them—or at least to 'temper and reduce them,' as Milton put it. This view is strongly presented by Bernays and seems to be the now accepted meaning of Aristotle's phrase. There is, however, a psychological difficulty in it; for emotions are not readily removed in so neat a fashion. Deliberately to arouse and stimulate an emotional discharge is not the way to be rid of an emotion, but the way to cultivate it. See Butcher, *Aristotle's Theory of Poetry and Fine Art;* Bernays, *Zwei Abhandl. u. d. Aristotelische Theorie d. Dramas;* Zeller, *Aristotle.*

CATHARTIC, a. *kă-thârtĭk* [Gr. *kathar'tikos*, purgative, purifying—from *kathaira*, I clean or purge]: purgative: N. a purging medicine, as senna, castor-oil, etc. Cathartics included originally all medicines supposed to purify the system from the matter of disease (*materies morbi*), which was generally presumed by the ancients to exist in all cases of fever and acute disease (see Crisis), and to require to be separated or thrown off by the various excretions of the body. Ultimately the term C. became limited in its signification to remedies acting on the bowels, popularly called *purgatives*—a mere translation of the Greek word. The principal cathartics are aloes, gamboge, colocynth, rhubarb, scammony, jalap, senna, Epsom and other salts, and castor-oil. Sulphur and cream of tartar form a well-known mild laxative; magnesia, also, is useful in many cases of indigestion with acidity. Croton oil and elaterium belong to a more dangerous class of C., as does also the favorite remedy of the ancients—the black hellebore. Many mineral springs produce waters whose cathartic effect is highly beneficial; and their use has in recent years largely taken

the place of the more drastic compounded drugs. See CONSTIPATION. CATHAR'TICAL, a. purgative. CATHAR'TINE, n. *-tĭn*, or BITTER OF SENNA, the essential laxative or purgative principle in senna. It can be isolated as a yellowish red uncrystallizable solid, which is deliquescent, soluble in water and alcohol, insoluble in ether, has a very bitter, nauseous taste, a characteristic odor, and possesses great purging powers, accompanied by nausea and griping. Three grains of C. are a full dose.

CATHAY, n. *kăth-ā':* in *OE.*, a name for China, or perhaps Chinese Tartary: see CHINA.

CATHCART, *kath'-kart,* SIR GEORGE: son of William, Earl C.: 1794–1854, Nov. 5; b. London Educated at Eton and Edinburgh, he, 1810, joined the 2d life guards, and fought with the grand army in the campaigns of 1812–13; and, as aide-de-camp to the Duke of Wellington,was present at Quatre Bras and Waterloo. In 1828, he was made lieut.-col., and served in Brit. America and the W. Indies for about eight years; and then in Canada, where he served more than six years. In 1852, having held the appointment of dep.-lieut. of the Tower for some years, he was made gov. of the Cape of Good Hope, with command of the forces, and in this capacity brought to a successful end the harassing Kafir war. He returned to England in time to be sent out to the Crimea as gen. of division. His bravery here was conspicuous, especially in the battle of Inkermann, where the odds were so terribly against the British forces, and where he was slain. He was buried on the spot where he fell, which, in his honor,was named Cathcart's Hill. C. was the author of a very valuable work, entitled *Commentaries on the War in Russia and Germany in* 1812 *and* 1813 (London, 1850).

CATHCART, WILLIAM SHAW, Earl: British general and diplomatist: 1755, Sep. 17—1843, June 17; son of Baron C. of Cathcart, county of Renfrew. Having studied at Glasgow he entered the army, took a prominent part in the American war, and fought with distinction in Flanders and n. Germany. In 1801, he was made lieut.-gen., and in 1803 commander-in-chief for Ireland. In 1805, he was engaged on a diplomatic mission to the Czar Alexander. In 1807, July, he received the command of the land forces employed to co-operate with the fleet in the attack on Copenhagen, and for his services in this capacity was made a British peer, with the title of viscount, and received a vote of thanks from both houses of parliament. In 1812, he was sent ambassador to St. Petersburg, accompanied the Czar Alexander in the campaigns of 1813–14, and was present at the congresses of Chatillon and Vienna. He was raised to the rank of earl, 1814, June 18. He died at his country residence, Cartside, near Glasgow.

CATHEDRAL, n. *kă-thē'drăl* [mid. L. *cathĕdrālis*—from Gr. *kathĕdra,* a chair—from Gr. *kata,* down; *hedra,* a seat or chair]: the principal church in a diocese, con-

taining the bishop's official seat or throne: ADJ. pertaining to the principal church of a diocese. CATHE'DRA, n. *-dră*, a professorial or other official seat or chair, but, especially, ecclesiastical; thus, 'to speak *ex cathedrâ*,' is to speak as from a *seat* of authority. The cathedral city is the seat of the bishop of the diocese, and his throne is placed in the cathedral church, which is the parish church of the whole diocese. The diocese was, in fact, anciently called *parochia* (parish) until the application of this name to the smaller portions into which the diocese was divided. In England a cathedral town has generally been understood to be entitled to the honors of a city, even though the town be not a borough incorporate; but in the case of Manchester the claim was disallowed by a court of law. The distinction between cathedral and collegiate churches consists principally in the see of the bishop being at the former. The governing body of a cathedral is called the dean and chapter—i.e., the dean and canons who meet for corporate purposes in the chapter-house of the cathedral. The property of the cathedral vests in this body. In England they elect the bishop of the diocese on the issue of a *congé d'élire* from the crown; but as the person to be elected is always named, and they may be compelled by a mandamus to elect that person and no other, the election is merely a form.

The bishop is 'visitor' of the dean and chapter. In England, by the act of 1840, all members of cathedrals, except the dean, are styled canons. Their *seat* in the cathedral, is called their *stall*. They are no longer called prebends. Canons must reside three months in each year. The act allows to the canons of Durham, Manchester, St. Paul's, and Westminster, an income of £1,000 per annum; to those of every other cathedral in England, £500. The bishop was always considered of common right to have the patronage of canonries, but formerly there were exceptions. Now, the appointment to all canonries is vested either in the bishop or in the crown. Where the bishop is patron, he 'collates,' and the dean and chapter 'induct,' by placing the new canon in a stall in the church. The crown appoints by letters patent, and the canon is installed without collation. Honorary canons have no emoluments, but rank after the canons. Minor canons, of whom there are from two to six in each cathedral, perform the daily choral services. The cathedral service is the usual Church of England service intoned, with an anthem and the psalms chanted. For the general plan of cathedral buildings, see CHURCH: for the more remarkable cathedrals see the names of the towns in which they are situated. In England, the number of cathedrals is above 30.

In the United States each Rom. Cath. bishop has his cathedral church. In the Prot. Epis. Church there is a movement in the direction of the cathedral system, and some dioceses now have their cathedrals.

CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK.

CATHELINEAU, *kât-le-nō'*, or *kâ-tch-le-nō'*, Jacques general of the army in La Vendée, in the w. of France: 1759, Jan. 5—1793, July 11; b. in very humble life, at Pin-en-Mauges, Lower Anjou. Horrified at the atrocities and despotic acts of the convention, he placed himself in opposition to it, and soon collected around him a body of loyal peasantry, whom he led against and defeated the republicans in several conflicts. After the victory of Saumur (q.v.) the council of generals appointed him, as having the greatest influence over his countrymen, commander-in-chief. He immediately determined to make an attack upon Nantes, and managed to penetrate into the town, where he was wounded by a musket-ball, and his troops immediately dispersed. He was carried to St. Florent, where he died. He was a man of great simplicity and honesty of character, and his piety was such that he was called the Saint of Anjou.

CATHERINE: see Catharine.

CATHERINE HARBOR, Russia, a port in the north-western part of the empire on the Murman coast of the Kola peninsula. It was formally opened in 1900, the city having been built by imperial command. It is primarily a naval station, the harbor being a mile and a half long, 1,600 feet wide, and 70 to 160 feet deep. The port is ice free.

CATHERINE'S ST., or SANTA CATHARINA, an island close to the coast of Brazil, between lat. 27° and 28° S., and belonging to the province or state of Santa Catharina. It is 37 miles long and 10 broad, and contains Desterro, the state capital.

CATHERWOOD, Mary Hartwell, American novelist: b. Luray, Ohio, 1847, Dec. 16; d. Chicago, Ill., 1902, Dec. 26. She was graduated from the Female College, Granville, Ohio, in 1868, and was married to John Steele Catherwood in 1887. Her especial field was the romance of American history and her writings include *Old Caravan Days; Craque-o'-Doom* (1881); *The Romance of Dollard* (1889); *The Story of Tonty* (1890); *A Woman in Armor; The Lady of Fort St. John* (1891); *The Chase of St. Castin, and Other Tales* (1894); *The Spirit of an Illinois Town* (1897); *The White Islander; Old Kaskaskia* (1893); *The Days of Jeanne d'Arc; Bony and Ban; Mackinac and Lake Stories; Spanish Peggy; Lazarre* (1902).

CATHETER, n. *kăth'ĕ-ter* [Gr. *kathĕtĕr*, a thing let down or put in]: in *surg.*, formerly any instrument whose use was to be introduced into mucous canals; in modern times generally reserved for tubular rods through which fluids or air may pass, and which may give free exit to the accumulated contents of such organs as the urinary bladder. Catheterism, n. *kăth-ĕt'ĕr-ĭzm*, the art or operation of introducing a catheter. The catheter for introduction into the bladder is a very old surgical instrument. The ancients made theirs of copper, which accumulated verdigris. In the 9th c. silver was substituted by the Ara-

bian surgeons as a cleanlier metal, and is still used by all who can procure the best instrument. Inferior catheters are made of German silver or pewter. Flexible catheters are made of gum elastic, which may be used either alone or supported on a wire. Other materials have been proposed. Of late years, gutta percha has been used, but owing to some awkward accidents—such as portions breaking off in the bladder—it has not been generally adopted by surgeons. The urinary C. for the male varies in length from ten to eleven inches; for the female it need not be more than four or five inches. The form is a matter of indifference, but most surgeons prefer an instrument straight to within the last few inches of its length; the latter should be curved into the segment of a small circle. Others, however, use a double curve, and, indeed, nearly every surgeon has a peculiar fancy in this respect.

CATHETOMETER, n. *kăth′ĕ-tŏm′ĕ-tĕr* [Gr. *kathĕtos*, vertical height; *metron*, a measure]: an instrument for measuring differences of vertical heights, consisting of a graduated scale, with a sliding telescope. CATHETUS, n. *kăth′ĕ-tŭs*, a line or radius falling perpendicularly on another.

CATHLAPOO′TLE: river in Wash. Terr. rising in the mountain dist. of Skamarria Co., and emptying into the Columbia river in Clarke Co. after a flow of abt. 90 miles.

CATHODE, n. *kăth′ōd* [Gr. *kata*, down; *hodos*, a way] the surface at which electricity passes out of a body: see ANODE: ELECTRODE: CATHODE RAYS: ROENTGEN RAYS

CATHOLIC, a. *kăth′ō-lĭk* [Gr. *katholĭkos*, universal—from *kata*, down; *holos*, the whole: L. *catholĭcus*]: universal; general; liberal; not narrow-minded or bigoted: N. a name claimed by, and very frequently applied to, the adherents of the Church of Rome (see CATHOLIC CHURCH) CATHOL′ICIZE, v. *-ĭ-sīz*, to become a Rom. Cath.; to convert to the Rom. Cath. faith. CATHOL′ICIZING, imp. CATHOL′ICIZED, pp. *-ĭ-sīzd*. CATHOLICISM, n. *kă-thŏl′ĭ-sizm*, universality; liberality of sentiments; term claimed for, and generally applied to, adherence to the Church of Rome. CATHOLICITY, n. *kăth′ō lĭs′ĭ-tĭ*, the quality of being universal or catholic; term claimed for, and sometimes applied to, the religion of the Church of Rome. CATHOLICON, n. *kă-thŏl′ĭ-kŏn*, a universal medicine CATHOLICLY, ad. *kăth′ō-lĭk-lĭ*, in a catholic and liberal spirit

CATHOLIC APOSTOLIC CHURCH: see IRVINGITES.

CATHOLIC BENEVOLENT LEGION, a fraternal society for Roman Catholic laymen, designed to afford to the members facilities for intellectual improvement, social advancement, and such other advantages as are offered by similar non-Catholic fraternities. It was organized in 1881 and incorporated under the laws of the State of New York with 11 charter members. Twenty years later the society had 50,000 active members, and had paid to widows and orphans of 6,200 deceased members

the sum of $12,000,000. The organization is incorporated under the style of The Supreme Council, Catholic Benevolent Legion, and to the Supreme Council final appeal is made on all matters of importance emanating from State or subordinate councils. Male Roman Catholics who are personally acceptable, of sound bodily health, and between the ages of 18 and 55, are alone eligible to membership. There is a relief fund on behalf of sick and distressed members, and a benefit fund, out of which a sum not exceeding $5,000 is paid to the beneficiaries of deceased members, and a sum not exceeding $2,500 to a member who is permanently disabled. A subordinate council of the Catholic Benevolent Legion may be formed in any congregation or parish; a charter is granted by the Supreme Council to a group of 15 or even of 7 eligible persons who associate themselves with a view to enter the fraternity. The organization has the express approval of the Pontiff and of all the archbishops and bishops in whose jurisdictions councils of the fraternity have been formed.

CATHOLIC CHURCH: the Universal Church of Christ, embracing all Christian disciples of all lands and all ages. It cannot properly be applied to any particular sect or body, such as the Roman, Greek, Protestant, Anglican, Genevan, Reformed, Lutheran, Episcopal, Presbyterian, Congregational, or Quaker, all of which form merely portions more or less pure of the 'church universal.' The ancient symbol known as the apostles' creed defines 'the Holy Catholic Church' as being 'the communion of saints.' No 'church' whose rules shut out any whom Christ plainly receives as His disciples, can be 'catholic.' The term Catholic was first employed to distinguish the Christian Church from the Jewish, the Jewish being restricted to a single nation, whereas the Christian was intended for the world in general. See ROMAN CATHOLIC CHURCH.

CATHOLIC COLLEGES IN EUROPE, AMERICAN. (1) The Pontifical College of the United States at Rome, Italy. This institution was founded by Pius IX., and was formally opened by him 8 Dec., 1859. In 1884 Leo XIII. ranked it among pontifical colleges, with the privileges thereto appertaining. Ecclesiastical students only are admitted; students pursuing the courses in the humanities, philosophy, and theology at the Urban College of the Propaganda. In 1904 the number of students was reported as 97. (2) The American College at Louvain, Belgium. This was founded in 1857 by several American bishops. The rules and constitutions were confirmed by Leo XIII. in 1895. Only those students are admitted who have finished a complete course in philosophy at a Catholic college. There is a three years' course in theology at the University of Louvain, followed by higher studies leading to the various degrees in theology and canon law.

CATHOLIC (Roman) EMANCIPATION ACT (10 Geo. IV. c. 7): act of the British parliament, 1829, Apr. 13, removing the legal burdens which had long rested on all adherents of the Church of Rome in that country. From first to last, the sufferings of the Rom. Catholics in Great Britain were the fruit of political tyranny quite as much as of religious rancor or fanaticism, and their release was effected by a change in the political rather than in the religious views or feelings of the dominant party. The first occasion on which even a promise of a different line of policy from that which had been originally adopted was held out to the Rom. Catholics of Ireland, was on the termination of the revolutionary war in 1691; and had King William been able to carry out the views which his personal enlightenment and liberality dictated, it is probable that Rom. Cath. emancipation would have been hastened by more than a century. But the English parliament, which was intensely anti-Roman Cath., enacted, 1691, Oct. 22, that Irish members of both houses should take the oaths of supremacy; and three years later a set of acts were passed which placed the Rom. Catholics in a worse position than at any previous period of their history. The whole population of Ireland was disarmed, and the priests banished from the country. But what was still more intolerable, was the interference with the private arrangements of their families. All Rom. Catholics were prohibited from acting as guardians not only to Protestant, but to Rom. Cath. children. At a somewhat later date (1704) it was enacted that if a son chose to turn Protestant he should be entitled to dispossess his father and at once to take possession of the family estate. Though Rom. Catholics were not directly declared incapable of holding land they were deprived of the right of acquiring it by purchase, or even by long lease; and if a Rom. Catholic chanced to occupy a place in a line of entail, he was passed over in favor of the next Protestant heir. No office of trust, civil or military, was now open to a Rom. Catholic; he was forbidden to vote at elections, to intermarry with a Protestant, or even to dwell in Limerick or Galway, except under certain conditions. But perhaps the most demoralizing provision of all was that which empowered the son of a Rom. Catholic to bring his father into chancery, to force him to declare on oath the value of his property, and to settle such an allowance on him as the court should determine, not only for the father's life, but the son's.

Among the other burdens of this heavy time may be mentioned the exclusion of the Rom. Catholics from the profession of the law, and the regulation that if a Protestant lawyer married a Rom. Catholic, he should be held to have gone over to her faith; the prohibition against Rom. Catholics acting as schoolmasters, under the penalty of being prosecuted as convicts, by which the whole body was virtually excluded from the benefits of education; and the still more summary enactment that if a priest celebrated marriage between a Protestant and a Rom. Catholic, he

should be hanged. But as years passed away, the memory of the foul deeds of the Inquisition and the confessional, and of the other enormities of which Rom. Catholics had been guilty in their days of power, waxed fainter; milder feelings began to prevail; and when Grattan appeared as the champion of their rights the field was already in some degree prepared for his labors. Favored by such influences, of which no one knew better how to avail himself, he succeeded, 1780, in carrying, in the Irish parliament, the famous resolution, 'that the king's most excellent majesty, and the lords and commons of Ireland, are the only competent power to make laws to bind Ireland.' Many of the disqualifying statutes were now repealed, and the claim for complete equality with Englishmen and Protestants, or complete separation from the sister-country, was now formally urged. From this period till the final liberation was achieved there was no rest. The Irish rebellion of 1798 brought home to the English nation the dangers to which it would constantly be exposed till the question was finally adjusted. The Act of Union of 1800 was the immediate consequence of that outbreak; and to this act the Irish were induced to consent by a virtual pledge entered into by Mr. Pitt, to the effect that the Rom. Cath. disabilities should be at once removed. But, like William of Orange, Pitt had pledged himself to more than he was able to accomplish. The king was seized with scruples regarding the obligations imposed upon him by his coronation oath, and made a vigorous stand against the proposals of his minister.

At a subsequent period efforts were made in the direction of emancipation by Mr. Canning and Lord Castlereagh. About 1824, the press began to take up the question warmly; a Rom. Cath. Assoc. was formed to prepare petitions to parliament; the Irish priests stimulated their flocks to subscribe for the purposes of agitation; O'Connell rapidly became a power; and as early as 1825, March, the importance of the question was so deeply felt that Sir F. Burdett ventured to introduce a relief bill, which passed the commons by a majority of 268 to 241, but was rejected by the lords. A slight temporary reaction now took place, the superstitious fears of ignorant Protestants being excited by a 'no-popery' cry, and in consequence a new relief bill, introduced 1827, though supported by the last effort of Canning's eloquence, was lost in the commons by a majority of four. But the liberal view of the Rom. Cath claims was essentially the popular one—at least among all but the least enlightened classes; and, as a proof of this, under the hostile administration of the Duke of Wellington, the very same resolution which had been lost in 1827 by a minority of four was carried in 1828 by a majority of six. The duke himself now began to waver in opinion, so that the beginning of the end was manifestly near. During O'Connell's famous canvass for the county of Clare the duke declared in the house of lords, 'if the public mind were now suffered to be tranquil, if the agitators of Ireland would only leave the public mind at rest, the people would become more satisfied, and I certainly think it would

then be possible to do something.' O'Connell's return for Clare, notwithstanding the existence of the oaths which precluded him from taking his seat in the house, and the events which now followed in quick succession, made it clear that the 'something' of which the duke had spoken must be the passing of the emancipation bill in the ensuing session. The king's speech, read Feb. 5 of the following year, accordingly contained a recommendation to parliament to consider whether the civil disabilities of the Rom. Catholics could not be removed, 'consistently with the full and permanent security of our establishments in church and state.'

On Mar. 5, Mr. Peel brought forward the great measure. The majority on the motion in the commons for going into committee was 188, in a house of 508 members; the debate on the second reading issued in a majority of 180; and the final majority, after the bill had passed through committee, in which not one of the many amendments proposed was carried, was 178 in a house of 462. In the lords the debate lasted three nights, the majority being 106 in favor of the second reading of a bill which, nine months before, the same house had refused by a majority of 45, even to entertain—so rapid and threatening had been the progress of the agitation. This righteous measure became the law of the land 1829, Apr. 13. Its main provisions were as follows; For the oath of supremacy another oath was substituted, by which all Rom. Cath. members of parliament bound themselves to support the existing institutions of the state, and not to injure those of the church (see ABJURATION). Rom. Catholics were admitted to all corporate offices, and to an equal enjoyment of all municipal rights. The army and navy had already been opened to them. On the other hand, they were excluded from the offices of regent, of chancellor of England or Ireland, and of viceroy of Ireland; from all offices connected with the church, its universities and schools, and from all disposal of church patronage. The most important security related to the franchise, in which a £10 was substituted for a 40*s.* qualification in Ireland. The clergy of the Rom. Cath. Church were left in the position of other dissenters, the government having declined either to endow them or to introduce any machinery for prying into their relations to the pope. But the public use of their insignia of office, and of episcopal titles and names, was denied them; the extension of monachism was prohibited; and it was enacted that the number of Jesuits should not be increased, and that they should henceforth be subject to registration. The Ecclesiastical Titles Assumption Act (q.v.), the outcome of Protestant panic in 1854, has been since repealed, and the use of ecclesiastical insignia and episcopal titles and names is no longer denied to the Rom. Cath. Church in Britain. See Miss Martineau's *History of England during the Peace.*

CATHOLIC EPISTLES: name, according to Clemens Alexandrinus and Origen, of certain epistles in the New Test. addressed not to particular churches or individuals, but either to the church universal or to a large and indefinite circle of readers. Originally, the C. E. comprised

only 1 John and 1 Peter, but at least as early as the 4th c. (by the testimony of Eusebius), the term was applied to all the apostolic writings used as 'lessons' in the orthodox Christian churches. But this included the epistle of James, of Jude, 2 Peter, and 2 and 3 John. These seven thus constituted the Catholic Epistles, although the genuineness and authenticity of the last-mentioned five were not universally acknowledged; but this very incorporation with epistles whose canonicity was not questioned naturally had the effect of confirming their authority, so that in a short time the entire seven were acknowledged a portion of the canon.

CATHOLIC INDIAN MISSIONS OF THE UNITED STATES: Although priests had visited the present territory of the United States previous to the advent into New Mexico of the Franciscan friar Mark of Nice (1539), Catholic mission work properly dates from the expedition of Coronado the year following. Franciscan friars were the pioneers; it was chiefly they who evangelized the tribes of Florida, Texas, New Mexico, Arizona, and Upper California. Their exceedingly long roll of missionaries, many of them martyrs, contains such illustrious names as John of Padilla, the protomartyr of the United States' missions (New Mexico, 1542), Francis Pareja (Florida, 1612), who published several treatises in Timuquanan, his *Doctrina Christiana* being the first work in any Indian language of this country to issue from the press; Ven. Anthony Margil of Jesus (Texas, 1716); Junipero Serra (California, 1769–84). The Dominicans gave to Florida Luis Cancer, the martyr (1549), Dominic of the Annuciation, Salazar and others (1559). The Jesuits were pre-eminently the apostles of the north, their missions extending from Maine to the Mississippi River. They also announced the Gospel in many other portions of the country, Among their best-known missionaries were Martinez (Florida, 1566); Rogel (South Carolina, 1569); Kühn (Arizona, 1687); the illustrious martyr Jogues (New York, 1646); Chaumonot and Dablon (New York, 1654); Le Moyne (New York, 1661); Allouez (Wisconsin, 1670); Marquette (discoverer of the Upper Mississippi, 1673); Rale (Maine, 1724); Dupoisson (Natchez, 1729). Besides Franciscans and Jesuits, other priests engaged in the work, and Christianity was preached to the natives throughout the length and breadth of the land.

In many instances the missions flourished exceedingly; the Indians received a rudimentary education, and were brought to a high state of civilization. In 1630 there were in New Mexico about 35,000 Christian Indians, living in 90 pueblos, each pueblo having its church, attended from 25 mission residences. In 1634 there were in Florida 35 Franciscans maintaining 44 missions, while the Christian Indians numbered between 25,000 and 30,000. In California the results were equally satisfactory. The fruits of the labors of the early mission-

aries may still be seen among the Indians of New Mexico, Arizona, California, Minnesota, Wisconsin, Michigan, and Maine. In the last century the tribes of the great Northwest were evangelized principally by the modern apostle of the Indians, Peter John De Smet, S. J. (1838–73) and his Jesuit co-laborers. The Jesuits, moreover, established missions among the tribes of Alaska. Other noted missionaries of the period were the Benedictine monks, who have met with marked success, especially in Minnesota and the Dakotas; and Bishop Báraga (Michigan, 1830–68); Archbishop Blanchet (Oregon, 1838–80); Bishop Marty, O. S. B. (Dakota, 1876–94).

One of the results of President Grant's 'Peace Policy' was the establishing, in 1874, at Washington, D. C., of the Bureau of Catholic Indian Missions, to represent Catholic Indian interests at the seat of government, to superintend Catholic agencies, and to obtain other agencies falling by the terms of the peace policy to the Catholic Church. Upon the modification of the peace policy, the bureau turned its attention to the establishing of schools and the aiding of missions, and since the withdrawal of government aid from Indian mission schools, it provides financial support for such Catholic institutions. The history of the bureau since its inception is intimately bound up with that of the missions. It has established over 50 schools, which represent an investment of more than $1,000,000. The name most prominent in Catholic Indian mission work of the present day is that of Mother M. Katharine Drexel, foundress of the Sisters of the Blessed Sacrament for Indians and Colored People, who has devoted her life and a very large fortune to mission work among the Indians and negroes.

The tribes wholly or partially Catholic are: Arickaree, Assinaboin, Abenaki, Blackfeet, Cœur d'Alene, Chippewa, Crow, Colville, Digger, Flathead, Gros Ventre, Huron, Kalapuya, Mohawk, Mandan, Menominee, Mission, Nez Percé, Osage, Ottawa, Pottawatomie, Piegan, Passamaquoddy, Pueblo, Papago, Pima, Quapaw, Sioux, St. Regis, Tinneh, Tulalip, Umatilla, Winnebago, Wenatchi, and Yakima. Catholics are also to be found among the Arapahos, Choctaws, Cherokees, Chickasaws, Creeks, Comanches, Cayugas, Miamis, Northern Cheyennes, Otos, Oneidas, Poucas, Peorias, Stocklridges, Sauk and Foxes, and Yumas. Most of these tribes are provided with missions, while a number of others live in the vicinity of missions and fall under Catholic influence. Consequently Catholic Indian mission work is carried on in Alaska, Arizona, California, Indian Territory, Idaho, Kansas, Minnesota, Michigan, Maine, Montana, Mississippi, New Mexico, Nebraska, New York, North Dakota, Oregon, Oklahoma, South Dakota, Washington, Wisconsin, Wyoming. Elsewhere small remnants of tribes are cared for by the parochial clergy. Sixty secular priests and 92 priests of religious orders (of which the most prominent are the Jesuits, Franciscans, and

Benedictines), aided by 107 catechists (69 Indian and 38 white), labor on the Indian missions. The total number of priests (109), teaching brothers (24), lay brothers (49), scholastics (10), sisters (384, representing 13 different sisterhoods), and secular teachers (55) engaged in Indian educational work is 631. There are 95 schools (boarding and day), with 6,050 pupils; 178 churches and chapels; and the value of church and school buildings is not less than $1,500,000. Of a total Indian population of 263,233, about 100,000 are Catholics.

CATHOLIC KNIGHTS OF AMERICA: a fraternal organization established in Kentucky in 1877. It was chartered in 1880. Its object is to unite fraternally all acceptable Roman Catholics of every profession, business, and occupation; to give all possible moral and material aid in its power to members of the organization, by holding instructive and scientific lectures, by encouraging each other in business, and by assisting each other to obtain employment, and to establish and maintain a benefit fund for the benefit of the families of the members. The age limits for admission are from 18 to 45. At first men only could become members; but since about 1901, women have been allowed admission on the same conditions as men, except the age limits for women are from 18 to 40. In 1903 there were 500 branches in the United States, with a membership of 30,000 and a reserve fund of $600,000.

CATHOLIC MISSIONARY UNION, THE: an organization of the Roman Catholic Church established to 'procure the services of clergymen and laymen of the Roman Catholic Church to teach and preach as missionaries of their faith in the United States and in furtherance of religious opinion;' 'to lease, take, hold, and purchase places, buildings and lands for such teaching and preaching;' to provide for the maintenance of the workers; to publish and distribute books, pamphlets, and other reading matter in connection with these efforts; and to aid archbishops, bishops and other church authorities in the United States to establish and conduct missions within their respective jurisdictions.

CATHOLICOS, *ka-thŏl'i-kŏs:* title of the patriarchs or chief ecclesiastics in the hierarchy of the Armenian Church, and of the Christians of Georgia and Mingrelia.

CATHOLICON, n. *kă-thŏl'i-kŏn:* a medicine for all diseases.

CATHOLICS, OLD: see Old Catholics.

CATHOLIC SEMINARIES: the name seminary is generally applied to institutions where candidates for the diocesan priesthood in the Catholic Church receive their spiritual and intellectual training. Preparatory departments (Petite Seminaire) are sometimes found in the same building, but the term is generally applied in the United States to those institutions which admit only those applicants who have completed the collegiate course.

Saint Mary's Seminary, Baltimore, Md., was the first

American Catholic seminary. It was founded at the request of Bishop Carroll, who secured from Father Emery in 1791 four priests of the Society of Saint Sulpice, which had been established in Paris by Father Olier in 1642 for the express purpose of training young men for the priesthood. For many years it was the only institution of its kind in the United States, and consequently it supplied to the ranks of the clergy the vast majority of native trained priests. In 1805 it was raised by the Maryland legislature to the rank of a university. In Saint Charles Theological Seminary, Overbrook, Pa., the aspirants to the priesthood for the archdiocese of Philadelphia are trained. In 1835 Bishop Kenrick placed five ecclesiastical students under the care of his brother, Rev. Peter Kenrick, in a little house on the corner of Fifth and Prune (now Locust Street), Philadelphia. This was the humble beginning of the present magnificent establishment. A preparatory department was begun in 1859 at Glen Riddle over which the present Bishop Shanahan of Harrisburg presided for nine years. This institution passed out of existence when, in 1871, the students to the number of 128 took possession of the present building at Overbrook. which had been erected by Bishop Wood. For the maintenance of this institution the Catholics of Philadelphia contribute annually about $35,000.

Saint Joseph's Seminary, the theological seminary for the archdiocese of New York, is located at Valentine Hill, near Dunwoodie, a station on the Putnam division of the N. Y. C. R.R., and within the city limits of Yonkers. It was founded by the late Archbishop Corrigan and constructed at a cost of nearly $1,000,000. It was opened in 1896 and placed under the direction of the Sulpitian Fathers. The full course of study comprises six years, two of which are devoted to philosophy, the remaining four to theology. This institution has taken the place of the old provincial seminary of Saint Joseph, at Troy, N. Y.

Mount Saint Mary's Theological Seminary, Emmetsburg, Md., was founded in 1808 by Rev. Mr. Du Bois during the episcopate of Bishop Carroll of Baltimore. In 1810 the college had 40 pupils, and as a more commodious building had then been erected, the founder gave to Mrs. Seton the log house which thus became the cradle of the great community of the Sisters of Charity in the United States. United to the seminary is the college department, wherein regular classical and scientific studies are pursued.

Saint Paul Seminary, Groveland Park, Minn., together with the College of Saint Thomas, Merriam Park, were founded by Most Reverend John Ireland, archbishop of Saint Paul. They are the result of the generosity of Mr. J. J. Hill, of the Northern Pacific R.R., are located within a few miles of the city, have maintained a high grade of scholarship from the beginning, and are directly affiliated with the Catholic University in Washington.

Niagara University (formerly Seminary of Our Lady of Angels), founded by Rev. John Lynch of the Congre-

gation of the Mission, a community organized by Saint Vincent de Paul in France in 1625. Father Lynch, the first president, who afterward became the first Archbishop of Toronto, in 1856 opened an institution on the lake shore near Buffalo, but finding the place not quite suited for the purpose, he removed in 1857 to the present site on the New York bank of the Niagara River, about four miles north of the great cataract. The institution was incorporated under the title of the College and Seminary of Our Lady of Angels by an act of the legislature of the State of New York in 1863, and in 1883 it was erected into a university with full powers and authority under the present title of Niagara University, by the regents of the State of New York.

Saint John's Ecclesiastical Seminary for the Boston archdiocese is located at Brighton, and was placed by its founder, Archbishop Williams, under direction of the Sulpitian Fathers, assisted here, as in Baltimore and New York, by professors taken from the ranks of the diocesan clergy.

In 1905 there were 83 seminaries in the United States, wherein 3,926 diocesan students and members of religious communities are trained for the priesthood. In Europe, two institutions are maintained by the American bishops for the training of American students, the American College in Rome, and another at Louvain.

CATHOLIC SUMMER SCHOOL OF AMERICA, a school for higher education established by the Roman Catholics at Plattsburg, N. Y., on Lake Champlain. It was organized in 1892, and met at various places before the present site was decided upon. In 1893 the regents of the University of the State of New York granted a charter by which this school became a legal corporation, and was classified in the system of public instruction devoted to university extension. Courses are given in anthropology, history, literature, ethics, science, and religion. Another summer school, the Columbian Catholic Summer School, assembled at Madison, Wis., in 1898, July, with lecturers from Washington, D. C., and other centres of educational work. In 1901 it removed to Saint Paul, Minn.. and adopted the name of the American Catholic Chautauqua.

CATHOLIC TOTAL ABSTINENCE UNION OF AMERICA, a confederation of all the Catholic total abstinence organizations in this country. The membership includes women's societies and juvenile organizations, as well as men's societies. While the union urges men to become total abstainers, it does not hold that drink is an evil in itself, or that the use of it is wrong, but that the use of it is for many the proximate occasion of sin; and that by such persons drink should be abandoned altogether.

CATHOLIC UNIVERSITY OF AMERICA, an educational institution founded for the purpose of affording an opportunity for pursuing higher studies in the most

important branches under the guidance of the Roman Catholic Church. The idea of a university of the highest class was formulated by the Right Reverend John Spalding, bishop of Peoria, on all appropriate occasions, and the effect of his discourses on public opinion had much to do with the contentment with which American Catholics received the announcement that the prelates of the United States had resolved, in 1884, November, in the third plenary council, that a university should be founded. The offer of Miss Gwendoline Caldwell, now the Marquise Monstieres de Merinville, of $300,000 was accepted. Washington, after mature consideration, was chosen in 1885 by the board of trustees. This decision was formally approved by the hierarchy in 1887, Sept. 7. The Middleton estate, near the Soldiers' Home, was bought in the same year. In the following year, the Right Reverend John J. Keane, bishop of Richmond, now archbishop of Dubuque, was elected the first rector. In a letter, dated 1885, Oct. 20, the Holy Father, Leo XIII., had warmly approved of the project. Bishop Keane was sent to Rome, bearing all the important documents concerning the university, and, on April 21, it was incorporated under the laws of the District of Columbia. The cornerstone of Caldwell Hall—the school of sacred sciences —was laid in 1888, May 4. In 1889, Nov. 13, the School of Sacred Sciences —that department of theology and cognate studies for students who had made preparatory studies in the seminaries—was opened with solemn ceremonies. Reverend James McMahon, afterward, as Monsignor McMahon, an honorary member of the papal household, a priest of the archdiocese of New York, offered to the university a gift of $400,000. This donation was accepted by the board of trustees in 1891, and the corner-stone of McMahon Hall was laid in 1892, April 27. In 1895, Oct. 1, McMahon Hall was dedicated, and the schools of philosophy and social sciences, including law, were opened. In 1896, March 24, the school of the technological sciences was founded. The whole field of theology is so wide, and the time allotted comparatively so short, being two years for the licentiate and two more for the doctorate, that the student is expected to concentrate his work upon one major branch of theology. Minor branches may be taken by him in the school of theology, or one minor in the school of philosophy. The school of sacred sciences is divided into four groups—the biblical, the dogmatic, the moral, the historical. The faculty of philosophy, organized in 1895, contains within it the schools of philosophy, philosophy proper, based on the teaching of St. Thomas Aquinas; experimental psychology, etc.; letters, literature, philology, etc.; physical, biological, and social sciences. The degrees offered in the school of sacred sciences are the baccalaureate, the licentiate, the doctorate—S.T.B., S.T.L., S.T.D. The degrees in philosophy are Ph.M. and Ph.D. The faculty of law contains the school of law and jurisprudence, the school of social sciences

having been transferred to the faculty of philosophy in 1898, Feb. 8. Under the board of the institution of technology is the school of the technological sciences.

CATHOLIC WINTER SCHOOL, a school holding session in the winter months at New Orleans. The first session was held in 1896, and was very successful. New Orleans was chosen for its seat as one of the most Catholic centres of American education, with Tulane University, the Howard Memorial Library, and a fine system of public schools. At the school popular education is naturally connected with religion; the sessions are opened with pontifical high mass in St. Louis Cathedral.

CATILINA, *kat-ĭ-lī'na* (usually known as CATILINE) Lu'cius Ser'gius: b.c. abt. 108–62; of a patrician but impoverished family in Rome. During his youth he attached himself to the party of Sulla. His bodily constitution, which was capable of enduring any amount of labor, fatigue, and hardship, allied to a mind which could stoop to every baseness and feared no crime, fitted him to take the lead in the conspiracy which has made his name infamous to all ages. In b.c. 68 he was elected pretor; in b.c. 67 gov. of Africa; and in b.c. 66 he desired to stand for the consulship, but was disqualified on account of the accusations brought against him of maladministration in his province. Disappointed thus in his ambition, and burdened with many and heavy debts, he saw no hope for himself but in the chances of a political revolution, and therefore entered into a conspiracy, including many other young Roman nobles, in morals and circumstances greatly like himself. The plot, however, was revealed to Cicero by Fulvia, mistress of one of the conspirators. Operations were to commence with the assassination of Cicero in the Campus Martius, but the latter was kept aware of every step of the conspiracy, and contrived to frustrate the whole design. In the night of b.c. 63, Nov. 6, Catiline assembled his confederates, and explained to them a new plan for assassinating Cicero; for bringing up the Tuscan army (which he had seduced from its allegiance), under Manlius, from the encampment at Fæsulæ; for setting fire to Rome, and putting to death the hostile senators and citizens. In the course of a few hours, everything was made known to Cicero. Accordingly, when the chosen assassins came to the house of the consul, on pretense of a visit, they were immediately repulsed. On Nov. 8, Catiline audaciously appeared in the senate, when Cicero—who had received intelligence that the insurrection had already broken out in Etruria—commenced the celebrated invective beginning *Quousque tandem abutére, Catilina, patientia nostra*? etc. (How long now, Catiline, will you abuse our patience?) The scoundrel was abashed, not by the keenness of Cicero's attack, but by the minute knowledge he displayed of the conspiracy. His attempt at a reply was miserable, and

was drowned in cries of execration. With curses on his lips, he abruptly left the senate, and escaped from Rome during the night. Catiline and Manlius were now denounced as traitors, and an army under the consul, Antonius, was sent against them. The conspirators who remained in Rome, chief of whom was Lentulus, were arrested, tried, condemned, and put to death, Dec. The insurrections in several parts of Italy were meanwhile suppressed; many who had resorted to Catiline's camp in Etruria deserted when they heard what had taken place in Rome, and his intention to proceed into Gaul was frustrated. In the beginning of Jan. (62) he returned by Pistoria (now Pistoja) into Entruria, where he encountered the forces under Antonius, and, after a desperate battle, in which he displayed almost superhuman courage and enthusiasm, was defeated and slain. The appearance of Catiline was in harmony with his character. He had a daring and reckless look; his face was haggard with a sense of crime; his eyes were wild and bloodshot, and his step unsteady, from nightly debauchery. The history of the Catiline conspiracy is given by Sallust in remarkably concise and nervous style.

CATINEAU-LAROCHE, *kâ-te-nō'lâ-rosh'*, Pierre Marie Sébastien: 1772, Mar. 25—1828, May 22; b. Saint-Brieuc, France. He studied at Poitiers, emigrated to San Domingo, 1791, and published at Port-au-Prince a paper, *L'ami de la paix et de l'union*. Giving offense by his anti-slavery opinions, he was prosecuted and narrowly escaped condemnation to death. Removing to Cape Haytien, then Cape Français, he was one of 17 Frenchmen saved from massacre. After visiting the United States and England, he returned to France, 1797, and prepared several lexicons. His printing office was burned and he entered the employ of govt., which sent him to Guiana, 1819, to examine its climate and resources; his notes thereon were published 1822.

CATION, n. *kă'tī-ŏn* [Gr. *kata*, down; *īōn*, going]: an electro-positive substance which appears or is evolved at the cathode: see Anode.

CATKIN, n. *kăt'kĭn* [after the domestic *cat*, and *kin*

Catkin of Willow. Catkin of Birch.

little: Dut. *katteken*, a little cat. a catkin: comp. G

*caitean*, the shag or nap of cloth; *caitin*, the blossom of the hazel, etc.]: same as AMENTUM (q.v.); in *botany*, a spike of numerous small, unisexual flowers, destitute of calyx and corolla, and furnished with scale-like bracteæ instead, the whole inflorescence finally falling off by an articulation in a single piece. Examples are found in the willow, hazel, oak, birch, alder, and other trees and shrubs, forming the nat. ord. AMENTACEÆ (q.v.). In some, as in the oak and hazel, the male flowers only are in catkins.

CATLIN, *kăt-lĭn*, GEORGE: 1796-1872, Dec. 23; b. Wilkesbarre, Penn.: artist and writer on Indians. He studied law in Conn., and practiced two years, but forsook it for art, and became a portrait painter in Philadelphia. Impressed by a delegation of Sioux, he conceived the idea of perpetuating the fast disappearing types, customs, and costumes of the Indians. Taking boat, 1832, at St. Louis for the Yellowstone, he spent eight years among some 48 tribes, learning their languages, studying their habits, and making copious notes, studies, and sketches. Returning by the Indian Territory, Arkansas, and Florida, he went to Europe, 1840, with his collection, which he exhibited in Egyptian hall, London, and published *Illustrations of the Manners, Customs, and Condition of the N. American Indians*, 2 vols., with above 300 engravings, London, 1841. The *Athenæum* called this 'a unique work, a book of extraordinary interest and value, beyond all praise.' It was followed by a *N. American Portfolio* (1844), 25 plates of hunting scenes, games, etc., in the Rocky Mountains and prairies. His *Eight Years' Travels and Residence in Europe* (1848), tells the adventures of three parties of Indians whom he introduced to the courts of England, France and Belgium. *The Breath of Life*, published 1861, in 'manugraph,' sets forth the advantage of breathing through the nostrils and keeping the mouth closed, especially in sleep. *Last Rambles among the Indians of the Rocky Mountains and the Andes*, appeared 1868. His later years were spent mostly in Europe, till 1871; he died at Jersey City, N. J. His Indian gallery was acquired by govt., and placed in the Smithsonian Institution at Washington.

CATLING, n. *kăt'lĭng* [see under CAT]: in *OE.*, catgut; the kind of string for fiddles.

CATLINITE, n. *kăt'lĭn-īt* [after *Catlin*, the Amer. traveller]: a reddish variety of claystone found west of the Mississippi.

CATMANDOO: see KHATMANDU.

CAT'MINT, or CATNIP (*Ne'peta cataria*): plant of the nat. ord. *Labiatæ;* widely diffused throughout Europe and the middle latitudes of Asia, and of North America; remarkable for the fondness which cats display for it. It appears to act upon them in a similar way to Valerian root; and when its leaves are bruised so as to be highly odoriferous, they are at once attracted to it, rub themselves on it, tear at it, and chew it. Its odor has been described

as intermediate between that of mint and that of pennyroyal. It has erect stems, 2-3 ft. high, dense whorls of many whitish flowers, tinged and spotted with rose-color, and stalked, heart-shaped leaves of a velvety softness, whitish and downy beneath. Other species are numerous in the s. of Europe, and middle latitudes of Asia.

CATO, *kā'to*, Dionysius: name prefixed to a little volume of moral precepts in verse, which was a great favorite during the middle ages. Whether such a person ever existed, is uncertain. The title which the book itself commonly bears is *Dionysii Catonis Disticha de Moribus ad Filium*. Its contents have been differently estimated; some scholars have considered the precepts admirable; others, weak and vapid; some have found indications of a superior scriptural knowledge; others, of a deep-rooted paganism. The style has been pronounced the purest Latin and the most corrupt jargon. The truth seems to be that, on a groundwork of excellent Latin of the silver age, the illiterate monks of a later period have inwoven a multitude of their own barbaric errors, which prevent a precise determination as to the period when the volume was composed. It begins with a preface addressed by the supposed author to his son, after which come 56 injunctions of rather a simple character, such as *parentem ama*. This is followed by the substance and main portion of the book—viz., 144 moral precepts, each expressed in two dactylic hexameters. During the middle ages the *Disticha* was used as a textbook for young scholars. In the 15th c. more than 30 editions were printed. The best edition, however, was published, Amsterdam, 1754, by Otto Arntzenius; translated into English by Caxton.

CA'TO, Marcus Porcius, surnamed *Censorius* and *Sapiens* ('the wise'), afterward known as Cato Priscus or Cato Major—to distinguish him from Cato of Utica: b.c. 234-149; b. Tusculum, in ancient Latium, abt. 15 m. s. of Rome. He inherited from his plebeian father a small farm in the country of the Sabines, where he learned to love the simple and severe manners of his Roman forefathers, which still lingered round his rural home. Induced by Lucius Valerius Flaccus to remove to Rome when that city was in a transition epoch, from the old-fashioned strictness and severe frugality of social habits, to the luxury and licentiousness of Grecian manners, Cato appeared to protest against this, to denounce the degeneracy of the Philo-hellenic party, and to set a pattern of sterner and purer character. He soon distinguished himself as a pleader at the bar of justice, and after passing through minor offices, was elected consul. In his province of Nearer Spain, where an insurrection had broken out after the departure of the elder Scipio (b.c. 206), Cato was so successful in quelling disturbances and restoring order that in the following year he was honored by a triumph. Cato showed extraordinary military genius in Spain; his stratagems were brilliant, his plans of battle were marked by great skill, and his general move-

ments were rapid, bold, and unexpected. In B.C. 187, a fine opportunity occurred for the illustration of 'antique Roman' notions. M. Fulvius Nobilior had just returned from Ætolia victorious, and sought the honor of a triumph. Cato objected. Fulvius was indulgent to his soldiers, a man of literary taste, etc., and Cato charges him, among other enormities, with 'keeping poets in his camp.' These rude prejudices of Cato were not acceptable to the senate, and Cato's opposition was fruitless. In B.C. 184, Cato was elected censor, and discharged so rigorously the duties of his office that the epithet *Censorius*, formerly applied to al. persons in the same station, was made his permanent surname. Many of his acts were highly commendable. He repaired the watercourses, paved the reservoirs, cleansed the drains, raised the rents paid by the publicans for the farming of the taxes, and diminished the contract prices paid by the state to the undertakers of public works. More questionable reforms were those in regard to the price of slaves, dress, furniture, equipage, etc. His despotism in enforcing his *own* idea of decency may be illustrated from the fact that he degraded Manilius, a man of pretorian rank, for having kissed his wife in his daughter's presence in open day. Cato was a thoroughly dogmatic moralist, intolerant, stoical, but *great*, because he manfully contended with rapidly-swelling evils; yet not *wise*, because he opposed with equal animosity the bad and the good in the innovations of his age

In B.C. 175, Cato was sent to Carthage to negotiate on the differences between the Carthaginians and the Numidian king Masinissa; but having been offended by the Carthaginians, he returned to Rome, where, ever afterward, he described Carthage as the most formidable rival of the empire, and concluded all his addresses in the senate-house—whatever the immediate subject might be—with the well-known words: '*Ceterum censeo, Carthaginem esse delendam*' ('For the rest, I vote that Carthage must be destroyed').

Though Cato was acquainted with the Greek language and its literature, his severe principles led him to denounce the latter as injurious to national morals. Cato was twice married. In his 80th year his second wife, Salonia, bore him a son, grandfather of Cato of Utica. Cato treated his slaves with shocking harshness and cruelty. In his old age he became greedy of gain, yet never once allowed his avarice to interfere with his honesty as a state functionary. He composed various literary works, such as *De Re Rustica* (a treatise on agriculture)—much corrupted, however. The best editions are by Gesner and Schneider in *Scriptores Rei Rusticæ*. His greatest historical work, *Origines*, has unfortunately perished, but some few fragments are given in Krause's *Historicorum Romanorum Fragmenta* (Berlin, 1833). Fragments of Cato's orations—of which as many as 150 were read by Cicero—are given in Meyer's *Oratorum Romanorum Fragmenta* (Zurich, 1842).

CATO, MARCUS PORCIUS, named CATO THE YOUNGER, or CATO UTICENSIS (from the place of his death): B.C. 95-

46, Apr.; great-grandson of Cato Major. Having lost, during childhood, both parents, he was educated in the house of his uncle M. Livius Drusus, and, even in his boyhood, showed decision and strength of character. In B.C. 72 he served with distinction in the campaign against Spartacus, but found no satisfaction in military life, though he proved himself a good soldier. From Macedonia, where he was military tribune in 67, he went to Pergamus in search of the Stoic philosopher, Athenodorus, whom he brought back to his camp, and whom he induced to proceed with him to Rome, where he spent the time partly in philosophical studies, partly in forensic discussions. Desirous of honestly qualifying himself for the questorship, he commenced to study all the financial questions connected with it. Immediately after his election he introduced, in spite of violent opposition from those interested, a rigorous reform into the treasury offices. He quitted the questorship at the appointed time amid general applause. In B.C. 63, he was elected tribune, and also delivered his famous speech on the Catiline conspiracy, in which he denounced Cæsar as an accomplice of that political desperado, and determined the sentence of the senate. Strongly dreading the influence of unbridled greatness, and not discerning that an imperial genius—like that of Cæsar—was the only thing that could remedy the evils of that overgrown monster, the Roman republic, he commenced a career of what seems to us blind pragmatical opposition to the three most powerful men in Rome—Crassus, Pompey, and Cæsar. Cato was a noble but strait-laced *theorist*, who lacked the intuition into circumstances which belongs to men like Cæsar and Cromwell. He was forced to side with Pompey, who had receded from his connection with Cæsar, and become reconciled to the aristocracy. After the battle of Pharsalia (B.C. 48), Cato intended to join Pompey, but, hearing the news of his death, escaped into Africa, where he was elected commander by the partisans of Pompey, but resigned the post in favor of Metellus Scipio, and undertook the defense of Utica. Here, when he had tidings of Cæsar's decisive victory over Scipio at Thapsus (B.C. 46, Apr. 6), Cato, finding that his troops were wholly intimidated, advised the Roman senators and knights to escape from Utica and make terms with the victor, but prohibited all intercessions in his own favor. He resolved to die rather than surrender, and, after spending the night in reading Plato's *Phædo*, committed suicide by stabbing himself in the breast.

CATOCATHARTIC, a. *kăt-o-kăth-âr'tĭk* [Gr. *kato*, downward; *kathartikos*, purifying]: purging by causing evacuation by stool.

CAT'ODON—CATODON'TIDÆ: see CACHALOT.

CAT-O'-NINE-TAILS [Pol. *kat*, executioner; *kota woti*, to scourge or torture: Russ. *koshka*, a cat; *koshki*, a whip of several cords]: nine strips of leather or cord knotted at intervals, used to flog offenders and criminals: see FLOGGING.

CATOPTRICS, n. plu. *kăt-ŏp'trĭks* [Gr. *katop'trĭkos,* pertaining to a mirror—from *katop'tron,* a mirror—from *kata* down or against; *optŏmai,* I see]: that part of the science of optics which treats of the properties of light reflected from polished bodies. CATOP'TRON, n. *-trŏn,* an optical glass or instrument. CATOP'TRIC, a. *-trĭk,* or CATOP'TRICAL, a. *-trĭ-kăl,* pertaining to. For the divisions of the science of optics, see OPTICS. Catoptrics is a subdivision of geometrical optics. The whole doctrine of catoptrics rests on the principle that the angle of incidence is equal to the angle of reflection and in the same plane.

CATOPTROMANCY, *ka-tŏp'tro-măn-sĭ:* divination by the mirror or looking-glass. At Patras, in Greece, the sick foretold their death or recovery by means of a mirror let down with a thread until its base touched the water in a fountain before the temple of Ceres. The face of the sick person appearing healthy in the mirror, betokened recovery; if it looked ghastly, then death was sure to ensue. More modern superstitions attach ill-luck to the breaking of a looking-glass, and to seeing one's face in a glass by candle-light.

CATS, *kâts,* JACOB: 1577–1660; b. Brouwershaven, in Zeeland: Dutch statesman and poet. He studied law, settled at Middelburg, rose to high offices in the state, and was twice sent as ambassador to England, first in 1627, and again in 1652 while Cromwell was at the head of affairs. As a poet, he had high popularity. His poems are characterized by simplicity, rich fancy, clearness, and purity of style, and excellent moral tendency. The most highly prized were the *Huwelyk, Trouwringh* (a series of romantic stories relating to remarkable marriages), and the *Spiegel van den Ouden en Nieuwen Tyd.* The best edition of his works appeared at Amsterdam, 19 vols., 1790–1800.

CAT'S'-EYE: beautiful mineral, a variety of quartz receiving its name from the resemblance which the reflection of light from it, especially when cut *en cabochon,* or in a convex form, shows to the light which seems to emanate from the interior of the eye of a cat. It is of various colors, and has a sort of pearly appearance, and is *chatoyant* or characterized by a fine play of light, which results from the parallel arrangement of the minute fibres of the stone itself, or from an intimate mixture of some foreign substance, such as amianthus. It has been supposed that cat's-eye is silicified wood. It is obtained chiefly from Malabar and Ceylon. The Singhalese are especially proud of it, believing it, although erroneously, to be found only in their island. It is often brought thence, cut to resemble a monkey's face, from the idolatrous regard entertained for the monkey. A chatoyant variety of felspar, also found in Ceylon, has been sometimes confounded with cat's-eye.

CATSKILL, *kăts'kĭl:* capital of Greene co., N.Y., on the w. bank of the Hudson, at the mouth of Catskill creek; 34 m. s. of Albany, and 109 m. n. of New York; on the West Shore railroad, and connected by ferry with the Hud-

son river railroad. The village has the co. buildings, 7 churches, 2 banks, 2 newspapers, and some factories. It is important as the main (and till recently the only convenient) entrance to the Catskill mountains. Pop. (1900) 5,484.

CATSKILL GROUP, in Geology: uppermost division of the Devonian system in America, best exemplified in Bradford, Tioga, Potter, and other n. cos. of Penn. These rocks are chiefly red sandstone and shale, containing the fossilized bones and scales of large ganoid fishes. The name was taken from the Catskill mountains, which were formerly believed to be composed of these rocks, but are now known to be chiefly strata of the Chemung group.

CATSKILL MOUNTAINS (formerly Kaatskill): group of the Alleghany chain in its largest sense, near the right bank of the Hudson and of the Mohawk, in N. Y., chiefly in Greene co. They do not form a symmetrical and extended range like those of the Appalachians in Penn., but branch w. in spurs, with precipitous slopes to the e., and elevated peaks, of which Hunter Mountain is 4,050 ft. high, and Overlook 3,800; after these are Round Top and High Peak. N. and w., on the borders of Schoharie co., and Delaware co., and s. in Ulster co. (except Overlook Mountain), the altitudes are not so great, and the slopes gentler. The value of this region is in the fine scenery that it offers within a few hours of the metropolis; in summer it is crowded with seekers after health, pleasure, and the picturesque. On old Pine Orchard, a level spot ending in a precipice 12 m. from Catskill village and 2,235 ft. above the Hudson, the Mountain House has stood for 60 years; 2 m. w. of it are the Kaaterskill falls, three cascades of 180, 80, and 40 ft. in succession. The land w. of this is partly cultivated, and nearly every farm holds a boarding-house. The Overlook House, not far to the s., was built abt. 1873 at an elevation of 3,000 ft. Till a few years ago the mountains were reached only by stages; now the Catskill Mountain railroad carries passengers in the season from Catskill village to Cairo and Palenville, the latter at the foot of the Kaaterskill Clove; and the Ulster and Delaware railroad, of greater length, starting from Rondout, skirts the mountains on the w., while its Stony Clove branch ascends to Hunter, Tannersville, and nearly to the Mountain House. The Kaaterskill and Plattekill Cloves, as well as the summit views, are probably unsurpassed for beauty in the n.e. states, except by the Adirondack and White Mountains. The region is still heavily wooded, with oak, maple, beech, birch, pine, hemlock, ash, cedar, and other trees.

CATS′-TAIL: see Typha.

CATS′-TAIL GRASS: see Timothy Grass.

CATSUP, n. *kăt′sŭp:* for Catchup, which see.

CATTACK; see Cuttack.

CATT, Carrie Lane Chapman, American suffrage

reformer: b. Ripon, Wis. She was educated at the State Industrial College of Iowa and subsequently studied law. She was for three years principal of the High School at Mason City, Iowa, and in 1884 was married to Leo Chapman, editor of the Mason City *Republican*, who died some two years later. Since 1890 she has devoted herself to woman suffrage work, lecturing frequently in behalf of the movement, and as chairman of the National Organization Committee doing very much to place the reform on a substantial basis. She has been associated in recent years with nearly all of the important gains which have been made in this direction, and the carrying of several state amendments relating to equal suffrage has been attributed to her influence. In 1891 she was married to G. W. Catt (q.v.). She was president of the National American Woman Suffrage Association 1900–4.

CATT, George William, American civil engineer: b. Davenport, Iowa, 1860, March 9, d. 1905. He was educated at the Iowa State College and subsequently studied engineering and law. He was chief engineer of the San Francisco Bridge Company, 1887–92; president and engineer of the New York Dredging Company, 1893–9; and president and engineer of the Atlantic Gulf & Pacific Company, from 1899. He built government dry docks at the navy yards at League Island, Philadelphia, and Mare Island, California.

CATTARO, *kât'tâ-rō:* town of Austria, in the crownland of Dalmatia; at the head of the Gulf of Cattaro, about 36 m. s.e. of Ragusa; strongly fortified, and surrounded on all sides by mountains. The castle, massive and almost inaccessible, stands on a precipitous rock immediately behind the town. Cattaro has a cathedral, several churches and hospitals. It was at one time cap. of a small republic; was in 1807 annexed to the kingdom of Italy, but was transferred to Austria, 1814, by the treaty of Vienna. Pop. 3,000.

CATTARO, Gulf of, or Bocca di Cattaro: inlet of the Adriatic, near the s. extremity of the Dalmatian coast. It consists of three basins or lakes, connected by straits of about half a mile in breadth. The outer entrance is only a mile and a half wide, and the total length of the gulf is about 30 m. Mountains protect it from all winds, and it has a depth of from 15 to 20 fathoms.

CATTEGAT, or Kattegat, *kăt'tē-găt* (*Sinus Codanus*): bay or arm of the sea between the e. coast of Jütland and the w. coast of Sweden, n. of the Danish islands. It is connected with the Baltic Sea by the Great and Little Belt (q.v.), and by the sound. The Skager Rack (q.v.) connects it with the North Sea. The length of the Cattegat is about 150 m., greatest breadth 85 m. It is of unequal depth, and has dangerous sand-banks. The principal islands are Lasöe, Samsöe, and Anhalt. The Danish shores of the Cattegat are low, but the Swedish shore is very steep and rocky.

CATTELL, *kăt'tl*, James McKeen, American psychologist: b. Easton, Pa., 1860, May 25. He graduated at Lafayette College in 1880, and studied at Leipsic, Paris, Geneva, and Göttingen. He was assistant under Wundt at the University of Leipsic, professor of pyschology in the University of Pennsylvania in 1888–91, and became professor of experimental psychology in Columbia University in 1891. He is co-editor of the *Psychological Review* and *Science*.

CATTELL, William Cassidy, American educator: b. Salem, N. J., 1827, Aug. 30; d. Philadelphia, Pa., 1898, Feb. 11. He was graduated at Princeton in 1848, and at Princeton Theological Seminary in 1852. He was professor of Latin and Greek in Lafayette College, 1855–60, and president of that institution, 1863–83, and subsequently prominent in the Presbyterian Church.

CATTERMOLE, *kăt'er-mōl*, George: 1800–1868, July 24; b. Dickleburgh, Norfolk: distinguished English painter in water-colors. His pictures, which embrace a wide range of subjects, are remarkable for originality of conception, vigorous execution, and fine color and tone. One of his best known and greatest pictures is *Luther at the Diet of Spires*, containing 33 portraits of the principal characters, copied from the authentic originals by old masters. He also designed the engravings for his brother's *History of the Civil Wars*, and illustrated many scenes in Scott's novels and in Shakespeare. His later works are chiefly oil paintings.

CATTI, or Chatti, *kât'tē:* German people, included by Cæsar under the name Suevi (q.v.), who inhabited a country nearly corresponding to the present Hesse. The s.w. part of their territory, around *Mattiacum*, was conquered by the Romans under Drusus. The Catti took part in the general rising of the Germans under Hermann. Tacitus praises them as excellent foot-soldiers. During the reign of Marcus Aurelius, in the end of the 2d c., they made incursions into Roman Germany and Rhætia. Caracalla failed in an expedition against them and the Alemanni in the 3d c. About the middle of that c., their name began to give place to that of the Franks (q.v.), and is last mentioned by Claudian late in the 4th century.

CATTLE, n. *kăt'tl* [OF. *catel* or *chatel*, goods, movables —from mid. L. *catal'la*, chattels, goods in general—specially applied to cattle as the principal wealth in an early stage of society—from mid. L. *capĭtālĕ* or *captālĕ*, capital, property—from L. *capĭtālis*, pertaining to the head, capital—from L. *caput*, the head—*lit.*, movable property in general]: quadrupeds, being domestic animals used for labor or for food—more especially applied to oxen, bulls, and cows (see Ox). Cattle-show, n. an exhibition of domestic animals in competition for prizes. Cattle-pen, n. pen for cattle.

CATTLE, in Law: see Chattel.

CATTLE-PLAGUE: general name for disease attacking

cattle, and sometimes sheep and allied species. The diseases thus termed are very various.

*Rinderpest* [Ger.], *or Steeple-Murrain*: contagious eruptive fever, or exanthema, affecting the bovine species; sheep, goats, deer, and other allied species occasionally, however, catch it from cattle. It occurs indigenously on the plains of w. Russia, whence it has at various times overspread most parts of the old world. There is good authority for saying that it has never yet appeared in the United States, though some allied diseases have wrought much havoc.

*Cattle Plagues in the United States:—Contagious Lung-plague of Cattle, or Contagious Pleuro-pneumonia, or Pulmonary Murrain.*—This has prevailed in Europe for hundreds of years. In this country it is always due to importation, and has spread only by contagion. Introduced in 1843 by one cow sold by the captain of an English vessel to a milkman in Brooklyn, N. Y., it spread to various places near the Atlantic coast, and has never been eradicated. In 1859, it was brought to Mass. by four cows imported from Holland and soon spread to several towns. By authority from the legislature sick and suspected animals were killed, and in six years the disease was 'stamped out' at a cost to the state of more than $77,000, and a loss to the farmers of about $250,000. Until 1883, this disease was confined to a small area, but was then scattered in several western states. *Cause.*—This disease is caused doubtless by bacteria which are taken into the lungs, produce inflammation, and destroy or radically change the tissues of these organs. It spreads more rapidly in a hot and moist climate than in one which is cold and dry, and is aggravated by impure air, improper food, and exposure. Period of incubation varies from ten days to several months. *Symptoms.*—A slight, dry and peculiar cough, increased temperature, diminished appetite, watery discharges from the eyes and nose, irregular action of the bowels, rapid and laborious breathing, great depression of the vital forces. The disease may terminate fatally in a few days or may be prolonged for months. *Prevention.*—Inoculation has often been tried with unsatisfactory results. Suspected animals should be immediately isolated and disinfectants freely used. Manure from sick animals should be mixed with quicklime and plowed into the land, and litter or fodder left in the stables should be burned. Animals which have been exposed to contagion may be made to breathe the fumes of burning sulphur in a close building every day for some weeks, and two drams of powdered copper as given daily to each mature animal. *Treatment.*—In clearly marked cases it is best to kill the animals at once. No one but a skillful veterinarian should attempt to treat this disease. Laxatives, diuretics, and sedatives are sometimes helpful in the early stages, and stimulants and tonics when prostration ensues. The inhalation of antiseptic remedies may also be useful. See PLEURO-PNEUMONIA, EPIZOOTIC.

*Aphthous Fever, Vesicular Murrain, or Foot-and-Mouth Disease.*—A remarkably contagious malady of domestic quadrupeds, especially those with cloven feet. It is marked by blisters on the mouth and feet and on the udders and teats of females. It is communicated by contact with diseased animals or articles which they have infected; also by the use of milk of such animals. This disease was introduced into this country from Canada in 1871, and prevailed in n. New York and New England; but the affected cattle were isolated, and the disease disappeared. It was brought also to Baltimore by an importation of Channel Island cows in 1883, but was soon eradicated. As the poison does not pass through the air, but is communicated by solid bodies, this is more readily controlled than other animal plagues. *Symptoms.*—Chilliness followed by increased temperature, heat and redness of the mouth, soreness of the udder, lameness, and inclination to lie down. On the second or third day large blisters appear in the mouth and between the hoofs. These soon break leaving raw sores. Inflammation is sometimes so severe as to cause the hoofs to fall off and the bones of the feet to decay. If properly cared for the majority of cases will recover in from eight to fifteen days, though fatal cases often occur. *Prevention.*—The isolation of all infected animals, with thorough disinfection of the stables and everything with which they have been in contact. *Treatment.*—Perfect cleanliness, laxatives, cooling and astringent lotions for the mouth, poultices or caustics for the feet, and cool, soft food.

*Malignant Anthrax, Bloody Murrain, Carbuncular fever, or Charbon.*—This is caused probably by unhealthy local conditions. In hot, damp seasons it spreads rapidly and is extremely fatal. It manifests itself in different forms but is always characterized by sudden and extreme changes in the blood and a strong tendency to gangrene; it is extremely contagious, and is especially likely to attack young and thriving animals. This disease has been known from early times and prevailed in many lands. It was epidemic in n. New York 1825, near Philadelphia 1834–36, and in Louisiana 1837–39. It often prevails in malarious districts of the south. The virus is exceedingly active, retains its vitality for a long period, and withstands a temperature of 145 degrees. *Causes.*—A plethoric condition of the system, sudden changes from poor to rich food, insufficient exercise, exposure to extremes of temperature, and a malarious atmosphere. *Symptoms.*—In many cases the disease assumes an apoplectic form and the animal dies almost instantly. Others are marked by nervous prostration, accelerated pulse, rapid breathing, blood stains on the mucuous membranes, and bloody matters in the urine and dung. In the early stages the temperature is elevated, later it decreases. The spleen is greatly enlarged and often ruptured. *Prevention.*—Good food, pure water, exercise, protection against extremes of temperature, keeping from undrained lands and rich river

bottoms in hot, dry times, and attention to hygienic conditions. Isolation of the sick and thorough disinfection must not be neglected. *Treatment.*—The diseased tissues of local swellings may be destroyed by caustics, and antiseptic lotions may be used. Tonics and stimulants are required to keep up the strength, laxatives and diuretics to eliminate the poison, and antiseptics to prevent its propagation.

*Texas Fever, Splenic Fever, Murrain.*—This disease was long thought to result from malarious conditions in the South. But it has been fully proven to be caused by bacteria that are harbored and carried by the cattle ticks that infest the Southern sections of the United States. This peculiar form of tick does not infest any other animals to any extent but the horned cattle of the farms and the wild deer, and these to a small extent. Cattle raised in a tick infested section grow up immune, but when they are carried to other sections where there are no ticks of this species, they carry the ticks with them in warm weather, and infect the pastures so that the non-immune cattle take the disease and die off rapidly. Of late years the Department of Agriculture has established a quarantine line across the country shutting out the tick infested regions and forbidding the taking of cattle north of this line during the warm months. In states just south of this line efforts are being made now with success to banish the ticks, which is easily done where cattle are not allowed to range the open lands and forests. This work is gradually extending. North Carolina alone has banished ticks for over twenty counties and the line has been extended below them. With a general and well organized effort on the part of the agricultural authorities of all the States it is perfectly possible to entirely banish the cattle ticks and rid the whole South of the disease.

CATTLE-TICK, or TEXAS-FEVER TICK, an arachnid (*Boophilus annulatus*) related to the mites, and prevalent in the western and southwestern States. It is a reddish coriaceous, flattened, or swollen creature from a quarter to half an inch in length. The cattle-tick lays a great many eggs, nearly oval, dark-brown, coated with a hard secretion, the process of egg-laying lasting for several days or a week. The young tick, on hatching, is whitish, afterward turning brown; it has three pairs of legs. After molting it becomes a nymph, when the fourth pair of legs is added. During the nymph stage the reproductive organs develop. After another molt it becomes sexually mature. It completes its development from the larva to the adult on cattle. After this second molt the couple pair, and the male grows but little. The female, voraciously feeding on the blood of her host, grows to a gigantic size, her body swelling and becoming gorged with blood and eggs. The males can be easily detected by their smaller size, and by the extension of the shield over the entire back. Ticks live upon the blood of their host. The

females, as they increase in size, store away quantities of the ingested food in an immense convoluted chamber or appendage of the stomach. In summer only three or four days after the final molt are necessary for the ticks to become large. When fully gorged, and the eggs have become fertilized, the female loosens her hold in the skin of her host, and falls to the ground, where she lays her eggs, after which her body contracts, shrivels up, and then dies. The young ticks get access to cattle by climbing bushes, whence they reach out and attach themselves to passing animals.

It has been proved that ticks, by sucking the blood of cattle infested with the Texas fever germ, which is a sporozoon (*Apiosoma bigeminum*), may communicate the disease (bovine malaria) to healthy cattle, just as the sporozoan blood-parasite of yellow fever, or of malaria, is communicated by a mosquito (*Anopheles*). In dealing with ticks it should be remembered that it breathes by spiracles or minute holes in the sides of the body. By the use of oil, or any greasy substance, those openings may be covered, thus asphyxiating the creature. The ticks may thus be killed by dipping or spraying the cattle with cotton-seed oil. Cattle should be kept away from wooded or bushy pastures.

There are one or two forms very closely allied to the Texas cattle-tick, and named *Boophilus australis;* they are regarded by experts as either distinct varieties or species from *B. annulatus.* They transmit the cattle-fever in the countries above named. Another sub-species or variety, the blue tick (*B. decoloratus*) in South Africa transmits the same disease in that region.

The Lone Star tick (*Amblyomma unipuncta*) is, next to the cattle-tick, to be held responsible for the transmission of the Texas fever. It may be recognized by the simple bright silver spot on the back. Consult Curtice, *The Cattle-Tick* (*Journal of Comparative Medicine and Veterinary Archives* 1891–2); Salmon and Stiles, *Cattle-Ticks of the United States* (*17th Annual Report of the Bureau of Animal Industry,* Washington, 1902).

CATTLEYA, n. *căt'lĕ-ya* [named by Lindley after Wm. *Cattley,* Esq.]: in *bot.*, extensive genus of orchids, natives of Central America and Brazil, where they are found on the bark of trees and on rocks. The species bear two or more flowers, generally rose-colored, occasionally yellow.

CATTY, n. *kăt'tĭ* [Malayan *kati;* Jap. *kin*]: Chinese weight of about 1¼ lb. It is the unit of weight used in China, and by the Malays.

CATTYWAR: see KATTYWAR.

CATULLUS, *ka-tŭl'lus,* GAIUS VALE'RIUS: celebrated Roman lyrist: b. Verona, B.C. 87; date of death unknown. His father was an intimate friend of Julius Cæsar, and the young poet must have frequently met the great warrior at the paternal residence, when the latter was on his way to Gaul. In early life he went to Rome, where his career

was that of an epicurean, and the expense of this kind of living soon involved him in debts; and he followed the pretor Memmius to Bithynia, with the intention, like his superior, of wringing a fortune out of the provincials. This fashionable but felonious method of acquiring money did not succeed in Catulus's case, mainly, however, through the more dexterous cupidity of Memmius. After his return Catullus appears to have lived mostly in Rome, in very straitened circumstances. His poems, 116 in number, chiefly lyrics and epigrams—brought to light first by Benvenuto Campesani, of Verona, in the beginning of the 14th c.—have always been justly admired for their exquisite grace and beauty of style, but are in many passages grossly indecent. In higher styles of writing Catullus was equally successful, especially in his odes, of which unfortunately only four have been preserved. His heroic or narrative poem on the marriage of Peleus and Thetis—consisting of more than 400 hexameter lines—and the wild enthusiastic poem entitled *Atys*, are especially worthy of notice. Most of the earlier editions of Catullus include the works of Tibullus and Propertius. The best modern editions are by Sillig (1823), Lachmann (1829), and Ellis (1867 and '78). There are English translations by Lamb (1821), Martin (1861), Cranstoun (1867), etc. See Munro's *Criticisms* (1878).

CATULUS, Quintus Lutatius, Roman general, historian, and poet: b. about 152 B.C.; d. 87 B.C. He was consul in 102 B.C. with Gaius Marius, and in the following year was proconsul. During his proconsulship he, with Marius, defeated the Cimbri near Vercellæ, the modern Vercelli, in northern Italy. As one of the aristocratic party and a partisan of Sulla, he was proscribed by Marius. With the exception of two epigrams nothing of his work has survived.

CAUCA, *kow'kâ*, Colombia, one of the nine departments of the Republic, bounded on the northwest by Panama; on the north by the Caribbean Sea; on the east by the departments of Bolivar, Antioquia, Tolima, and Cundinamarca, and the Republics of Venezuela and Brazil; on the south by Brazil and Ecuador; on the west by the Pacific Ocean. The territory of Caquetá and of the districts of Huila, Inzá, and Páez are included in this department. The eastern part of Cauca is watered by the Amazon and some of the affluents of that river; the Guaviare and the Casiquaire flow into the Orinoco; the Atrato empties into the Gulf of Urabá; while a dozen smaller rivers flow into the Pacific. On both the Caribbean and Pacific coasts there are several ports. Area about 260,000 square miles, population about 700,000. See Colombia.

CAUCALIS, n. *kaw'kal-ĭs* [Gr. *kaukalis*, an umbelliferous herb]: in *bot.*, genus of umbelliferous plants, consisting of herbs with multifid leaves. All the species are natives of Europe and the temperate parts of Asia and Africa. None of the species are attractive in appearance.

CAUCASUS, *kaw'ka-sŭs*, and the CAUCASIANS, *kaw-kā'shĭ-anz*, or *-zhĭ-anz:* region and people near the boundary line of Europe and Asia, between the Black and Caspian seas. The great mountain range of the Caucasus forms the backbone of a well-marked geographical region, nearly corresponding with the Russian governor-generalship or lieutenancy of Caucasia. The natural and administrative n. limit is the great Manitch depression, extending from the Sea of Azof to the Caspian, and including the basins of the Kuban and Terek rivers. The s. natural limit is along the basins of the Rion and Kur rivers. The Russian province comprises all the Russian territory to the Turkish and Persian frontiers, including also part of the Armenian highlands and the mountain masses adjoining them, now known by the infelicitous name of Little Caucasus, s. of the Rion and Kur rivers. Little or Anti-Caucasus is connected with Caucasus proper by the narrow Mesk ridge, crossing the Rion-Kur valley between the headwaters of those streams. The Sea of Azof and the Caspian seem to have been anciently connected by the Manitch depression; s. of which extend vast steppes of flat, treeless land—fertile, but with little or no water. South of the steppe to the n. spurs of the mountains is luxuriant park land, covered with magnificent grasses, and also quite level. Beyond this rise the mountains in successive terraces. On the s. side, toward the Rion and Kur, the mountain face is much steeper and more sudden.

The Caucasus occupies the isthmus between the Black Sea and the Caspian, its general direction being from w.n.w. to e.s.e. From the peninsula of Taman on the Black Sea, to the peninsula of Apsheron on the Caspian, it has a length of about 750 m. The breadth, including the secondary ranges and spurs, is about 150 m., but that of the higher Caucasus does not exceed 70 m. This range, formerly regarded as belonging entirely to Asia, is now usually treated as part of the boundary-line between Europe and Asia, though the political demarcations do not coincide. The higher and central part of the range is formed of parallel chains, not separated by deep and wide valleys, but remarkably connected by elevated plateaus traversed by narrow fissures of extreme depth. The highest peaks are in the most central ridge or chain, at least six of them over 16,000 ft., much exceeding the highest Alps. Mount Elburz rises 18,000 ft. above the sea; Kazbek more than 16,500 ft.; and between these are Kosh-tan-tau and Dikh-tau. Here the line of perpetual snow is between 10,000 and 11,000 ft. high; but the whole amount of perpetual snow is not great, nor are the glaciers very large or numerous. For more than 100 miles' length of the main ridge, there are no passes lower than 10,000 ft. The central chain, in its highest part at least, is granitic or even pure granite. On either side of the granitic axis are metamorphic rocks, such as mica-schists and talc-schists; and beyond these, clay-slates and schists. The secondary parallel chains on both sides of the central ridge are of limestone. The spurs and outlying mountains or hills are of less extent and importance than those of almost

any other mountain-range of similar magnitude, subsiding as they do until they are only about 200 ft. high along the shores of the Black Sea. Some parts are entirely destitute of wood, but other parts are very densely wooded, and the secondary ranges, near the Black Sea, bear magnificent forests of oak, beech, ash, maple, and walnut; grain is cultivated in some parts to a height of 8,000 ft., while in the lower valleys, rice, tobacco, cotton, indigo, etc., are produced. As might be expected from the geographical situation of the C., the climate, though generally healthful is very different on the n. and s. sides, the vine growing wild in great abundance on the south, not on the north. The s. declivity of the mountains, toward Georgia, presents much exceedingly beautiful and romantic scenery.

There are no active volcanoes in Mount C., but every evidence of volcanic action. Elburz and Kazbek both are of volcanic origin. There are hot springs and mud volcanoes at each end of the range, and there are also famous naphtha springs in the peninsula of Apsheron (see Baku). Mineral springs also occur in many places. The bison, or aurochs, is found in the mountains; bears, wolves, and jackals are among the carnivorous animals. Lead, iron, sulphur, coal, and copper are found.

The waters of the C. flow into four principal rivers—the Kuban, and the Rion or Faz (anc. *Phasis*), which flow into the Black Sea; and the Terek and the Kur, which flow into the Caspian. Kuban and Terek are n., Rion and Kur, or Kura, s. of the mountains. The Russians have, with great labor, carried a military road through a valley somewhat wider than most of the Caucasian valleys. This is the tremendous fissure or ravine of the Dariel gorge, about halfway from Black Sea to Caspian. The road passes over a height of abt. 8,000 ft., and is protected by many forts. The only other road is by the Pass of Durbend, near the Caspian Sea. There is a railway from Baku by Tiflis to Poti and Batum.

Caucasian was the name adopted by Blumenbach (q.v.), for one of his main ethnological divisions of mankind; and as the solitary Georgian skull that he had was the finest in his collection, the Caucasian was taken by him as the finest type of the Indo-European stock. Dr. Latham's remark on Blumenbach's narrow basis, is: 'Never has a single head done more harm to science than was done in the way of posthumous mischief by the head of this well-shaped female from Georgia.' Subsequent ethnologists have, mainly on philological grounds, broken up the Caucasian variety of Blumenbach into two well-marked philological groups, the Aryan (q.v.), or Indo-European, and the Shemitic (q.v.). Syro-Arabian peoples. The name Caucasian was clearly a misnomer when it suggested affinity in blood or in language between the very various races of the Caucasus, classified below, and Aryans or Semites; and Prichard and others proposed actually to connect most of the Caucasus peoples with the Mongolian races of Asia. Later anthropologists, finding the word convenient, use Caucasian or Caucasic for the fair type of man as opposed to the Mongolic or yellow type,

but they distinctly repudiate any suggestion of community of race or of language between the peoples so named; and desire to indicate a physical fact and an anthropological type. See ETHNOLOGY: also PHILOLOGY.

The Caucasus has been called the Mountain of Languages, from the multiplicity of tongues spoken in this narrow area —tongues many of them totally distinct from one another, and with one exception, apparently unconnected with the languages of any other part of the globe, or race of men; unless Sayce be right in his belief that the ancient Hittites (q.v.), whose empire in Asia Minor rivalled that of the Assyrians, were of the same stock. There are certain well-marked groups among them, within which manifest affinity prevails. (1) The southern division or Kartveli stock comprises the Georgians or Grusians, mainly in the upper and middle basin of the Kur; the Imeritians, w. of the watershed between the Kur and Rion; the Mingrelians farther w. reaching to the Black Sea; the Gurians, s. of the Rion; the Laz on the Turkish frontiers; and the Svans or Suanetians, between the Mingrelians and the higher Caucasus. (2) The western division contains the Tcherkess or Circassian race, formerly on the left bank of the Kuban, n. of Caucasus; the Abkhasians in the narrow strip of land between the Caucasus and the Black Sea on the s.; and the Kabards, n. and e. of Elburz. (3) The eastern division contains the Chechenz or Tchetchens on the n. slopes of the eastern Caucasus, down to the Terek; and the Lesghians further e. and s. It is doubtful whether the numerous small tribes called Lesghians have any affinity with the Tchetchens, or how far they are related to one another; only one, the Avars, have a written language, and they use Arabic characters. (4) The Ossetes or Ossetians in the centre of Caucasus, on both slopes about Kazbek, are unquestionably a race of the Aryan stock, and the language has affinity with the Persian branch; they call themselves Irun (probably meaning *Aryan*). All the Caucasian languages are extremely harsh. Some of them are regarded as inflectional, others as agglutinative.

In various portions of this territory, there are, of course, other intrusive elements of population of foreign race: Russian Slavs; Tartars; numerous Armenians; Kurds; Greeks; Tats and other Iranians or Tajiks; and a German colony from Würtemberg, east of Tiflis. Not merely do the inhabitants of the Caucasus differ widely in race, but they represent great variety of stages of culture, from the indolent, music-loving Georgians to the wild and semi-barbarous Suanetians. Christianity is the faith of some races, as the Georgians and Ossetes; Mohammedanism of a fanatical type that of others, as the Lesghians, while primitive pagan superstitions seem largely to underlie both religious professions. One Kartvelian tribe, the Khevsurs, has in some measure combined Christianity with Moslem usages.

The resistance which the Caucasian peoples for more than half a century offered to the arms of Russia, attracted to them the attention of the world. But with the capture in 1859 of Shamyl (q.v.) the prophet-chief of the Lesghians, who for more than 20 years had withstood the armies sent against

him, the power of the Caucasians was shattered; by 1870 it was completely broken. The bulk of the Circassians migrated to Turkish territories in Asia or Europe; most of the Abkhasians have done the like. Of the original native Caucasian races, probably not much more than 1,000,000 remain. The ancient divisions of the country, Georgia, Imeritia, Svanetia, Ningrelia, etc., were based on tribal distinctions. These have disappeared from the Russian administrative system. According to the latter, the main range of Caucasus divides the province into Ciscaucasia n. of the mountains, and Transcaucasia s. of them; the former comprising the govts. of Stavropol, Kuban, Terek; the latter, those of Daghestan (really n. of Caucasus), Sakatal, Tiflis, Kutaïs, Sukhum, Black Sea, Elisabetpol, Baku, and Erivan. Add Batum and Kars (Russian Armenia), and the Trans-Caspian territory; and then Caucasia in the widest sense has an area of 308,000 sq. m.; pop. 6,290,000.

The chief town in Ciscaucasia is Vladikavkaz, in Transcaucasia, Tiflis—the two connected by the great military road through the Caucasus. The old cap. of Georgia was Mtzkhet, a good specimen of a Georgian word. For Caucasus and Caucasia, see the map of RUSSIA: also CIRCASSIANS: GEORGIA: IMERITIA: TRANSCAUCASIA: and, for the wars with Russia, SHAMYL.

CAUCUS, n. *kaw'kŭs* [a supposed corruption of *Calkers*, who, with others, used to meet in Boston for political purposes previous to the independence of the United States.]: in the *United States*, a meeting preliminary to a public meeting of citizens for election or for other purposes, generally political; a factious meeting designed to influence the general body of the citizens: V. to hold a preliminary party meeting of the heads of the party with the view of devising new measures or plans of action. CAU'CUSING, imp. CAUCUSED, pp. *kaw'kŭst.*

CAUDAL, a. *kaw'dăl* [L. *cauda*, a tail]: pertaining to the tail of an animal; in *bot.*, applied to thread at the bottom of the seed of a plant. CAU'DATE, a. *-dāt*, and CAU'DATED, a. in *bot.*, applied to seeds that have a tail-like appendage. CAU'DICLE, n. *-dĭ-kl*, in *bot.*, the tail-like process supporting the masses of pollen in orchids.

CAUDEBEC-LÈS-ELBEUF, *kōd-běk'lāz-ĕl-bŭf':* town of France, dept. of Seine Inferieure, 12 m. s. of Rouen; has manufactures of cloth. Pop. (1886) 11,038.

In the same dept., on the Seine, is a village named CAUDEBEC, a picturesque little town, formerly cap. of the Pays de Caux and strongly fortified. Pop. (1886) 2,200.

CAUDETE, *kow-dā'tā:* town of Murcia, Spain, 50 m. e.s.e. of Albacete. Pop. 6,500.

C. is the name also of a small place in New Castile.

CAUDEX, n. *kaw'dĕks* [L. *caudex*, the trunk]: in *bot.*, the unbranched trunk or axis of a tree, as palms, tree-ferns, etc.

CAUDINE FORKS, *kaw'dēn* (*Furculæ Caudinæ*): two high, narrow, wooded mountain-gorges near the town of Caudium, in ancient Samnium, on the borders of Cam-

pania; noted for the defeat of the Romans in the second Samnite war (B.C. 321): see ROME.

CAUDLE, *kaw'dl* [OF. *chaudeau* or *chaudel*, a kind of gruel or broth—from *chaud*, warm—from mid. L. *caldus*—from L. *calĭdus*, hot, warm: comp. Gael. *cadail*, sleep]: a warm drink containing wine or other liquors given to women at childbirth: V. to prepare caudle; to treat tenderly. CAU'DLING, imp. CAUDLED, pp. *kaw'dld*. CAUDLE-CUP, the drink given to women at childbirth; the glass of wine, or other liquor, drunk in honor of the child born.

CAUF, n. *kawf* [Celt. *kaff;* L. *cavus*, hollow: L. *cophĭnus*, a basket]: a chest for holding live fish; the box or cage for raising coal from the mine.

CAUGHNAWAGA, *kaw-nâ-wâ'ga:* Canada, a town in the province of Quebec, situated on the St. Lawrence River, near the Lachine Rapids, opposite Lachine. It is an Indian town, and was established by the Jesuit missionaries in 1676 as a colony for the Indians who were converted to Christianity. The converts were Iroquois, mostly Mohawks, and remained loyal to the French during their quarrels with other Indians and the English. In the Canadian insurrection of 1838 Caughnawaga was the first place to be attacked by the rebels, who were repulsed by the Indians and a number of them taken prisoners. Pop. 2,000.

CAUGHT, v. pt. or pp. *kawt:* see under CATCH.

CAUL, n. *kawl* [AS. *cawl*, a basket: F. *câle*, a kind of little cap: comp. Gael. *ceil*, to cover, to hide]: the omentum or fatty membrane covering the lower intestines; the thin membrane sometimes covering the head and face of a child when born; a net for inclosing the hair; a skull-cap; also spelt KELL.—The membrane encompassing a child's head at birth has had extraordinary superstitions connected with it from very early ages till the present day. It was the popular belief that children so born would be very fortunate, and that the caul brought fortune to those purchasing it. This superstition was so common in the primitive church, that St. Chrysostom felt it his duty to inveigh against it in many of his homilies. In later times, midwives sold the caul to advocates at enormous prices, 'as an especial means of making them eloquent,' and to seamen as an infallible preservative against drowning. It was supposed also that the health of the person born with it could be told by the caul, which, if firm and crisp, betokened health, but if relaxed and flaccid, sickness or death.

CAULAINCOURT, *kō-lăng-kôr'*, ARMAND AUGUSTIN LOUIS DE, Duke of Vicenza: 1772, Dec. 9—1827, Feb. 19; b. Caulaincourt, dept. of Somme: statesman of the French empire. He early distinguished himself as an officer, was made a gen. of division 1805, and shortly afterward created Duke of Vicenza. In 1807, he was appointed ambassador at St. Petersburg. In 1813, he was made minister for foreign affairs. At Napoleon's abdication it was chiefly

through Caulaincourt's intervention that more favorable conditions were obtained for the fallen emperor, and that the island of Elba was ceded to him. During the Hundred Days, Caulaincourt resumed office as minister of foreign affairs and was made a peer. He died in Paris.

CAULDRON, n. *kawl'drŏn:* see CALDRON.

CAULESCENT, a. *kaw-lĕs'ĕnt* [from a supposed mid. L. *caules'cens* or *caulescen'tem*—from L. *caulis*, a stalk]: in *bot.*, having a visible stem. CAU'LICLE, n. *-lĭ-kl*, a short stem. CAU'LICULE, n. *-lĭ-kūl*, in *bot.*, a short stem; in *arch.*, one of the curled tops in a Corinthian capital. CAU'LICULES, n. plu. *-kūlz*, in *bot.*, small stems rising immediately from the neck of the root. CAU'LIFORM, a. *-lĭ-fawrm* [L. *forma*, shape]: same as CAULESCENT. CAU'LINE, a. *-lĭn*, also CAU'LINARY, a. *-ĕr-ĭ*, growing on a caulis or stem. CAULIS, n. *kaw'lĭs*, the stalk or stem of a plant; an aerial stem.

CAULIFLOWER, n. *kŏl'ĭ-flowr* [OF. *col*, a cabbage—from L. *caulis*, a cabbage, a stem, and *flower;* Sp. *coliflor;* F. *choufleur*, a cauliflower]: variety of the common kale or cabbage (q.v.). It was cultivated by the Greeks and Romans, but was little attended to in England till the end of the 17th c.; yet prior to the French Revolution, cauliflower was an article of export from England to Holland, while English cauliflower seed is still preferred on the continent. The cauliflower is entirely the product of cultivation. The leaves are not in this, as in other varieties of the same species generally, the part used, nor are they so delicate and fit for use as those of most of the others, but the flower-buds and their stalks, or, properly speaking, the inflorescence of the plant deformed by cultivation, and forming a head or compact mass generally of a white color. There are many sub-varieties, but all of them are rather more tender than the ordinary form of the species. The cauliflower requires a moist, rich, loamy soil with abundance of manure, and above all, very careful cultivation, directed to the object of having the heads not merely large but as compact as possible. Great care is bestowed on the selection of proper plants for seed. Cauliflower may be preserved for some time fit for use by pulling the plant up by the roots, and hanging it in a cold and dry place.—BROCCOLI (q.v.) may be regarded as another kind of cauliflower.

CAULK, n. *kawk* [mid. L. *calchārĕ*, to press together: com. Gael. *calc*, to ram, to beat in; *calcair*, a cauker (see CALK)]: in a *ship*, the operation of driving oakum into the seams between the planks. CAULK'ER, n. one who. CAULKING-IRON, an iron chisel for driving in the oakum.—Caulking renders the seams of a vessel water-tight. The quantity of filling driven in depends on the thickness of the planking; it varies from 1 to 13 double threads of oakum, with 1 or 2 single threads of spun-yarn. The caulker first *raims* or *reems* the seam—that is, drives a caulk iron into it, to widen the seam as much as possible, and close any rents or fissures in the wood; he then drives

in a little spun-yarn or white oakum with a mallet and a kind of chisel; and afterward a much larger quantity of black or coarse oakum. The fibres are driven in until they form a densely hard mass, which not only keeps out water, but strengthens the planking. The seam is finally coated with hot pitch or resin.

CAULOPTERIS, *kaw-lŏp'tėr-is:* generic name for the stems of fossil tree-ferns found in the carboniferous and triassic measures. They are hollow, and covered with the markings similar to the leaf-scars on recent tree-ferns. Twelve species have been described.

CAUQUENES, *kow-kā'nĕs*, BATHS OF: a group of remarkable mineral springs long celebrated for their medicinal properties, in Chili, 62 m. s.s.e. from Santiago. An earthquake, 1835, suddenly reduced their temperature from 118° to 92° Fahrenheit.

CAURSENES: sometimes called the Pope's Merchants; a class of Italian usurers who made their appearance in London in the early part of the 13th c. After practicing the grossest extortion, they were expelled from London by Roger, Bishop of London, 1235. They subsequently obtained the protection of the pope and became very numerous. Their extreme exactions led to their prosecution in the civil courts, but authorities were found who were willing to grant them permission to continue their practices on the payment of large sums of money. They were expelled from London finally abt. 1260.

CAUS, *kō*, or CAULX, *kō*, SALOMON DE: abt. 1576—abt. 1630; b. Dieppe, France: physicist. Fleeing from persecution as a Protestant he went to England abt. 1612, and lived at Heidelberg 1614–20 as architect to the elector palatine Frederick V. His last ten years were spent in Paris; the tale of his dying insane in the hospital of Bicêtre appears to lack foundation. Arago, who rescued his books from oblivion, considered him the inventor of the steam engine. His *Von gewaltsamen Bewegungen*, which appeared at Frankfort 1615, and at Paris 1624, as *Les Raisons des Forces Mouvantes*, suggested an apparatus for raising water by the expansion and condensation of steam; from this the Marquis of Worcester may possibly have borrowed the ideas outlined in his *Century of Inventions* (1633), and *Exact and True Definition, etc.* Caus published, also, *La Perspective* (London, 1612); *Institution Harmonique* (Frankfort, 1615); *Hortus Palatinus* (Heidelberg, 1620); and *La Pratique et Démonstration des Horologues Solaires* (Paris, 1624).

CAUSALITY, in Philosophy: the relation obtaining between two events, one of which immediately succeeds the other in time, such that the presence of the antecedent event is indispensable to the occurrence of the consequent event. The antecedent event is called the 'Cause' and the consequent event the 'Effect.' In common speech and thought it is assumed that there is some *power* in the cause which produces the effect and that, in some

way, this power passes over into the effect or is transformed in it. Hence cause and effect are regarded as simple and separable facts having definite boundaries. Thus, if a typhoid epidemic arise in a town, its cause may be sought for in impure water or tainted oysters. If it be established that in every case of primary infection, the patients drank water from a certain well and, if, on examination, the water is discovered to contain typhoid germs, it is assumed that the cause of the epidemic has been established. Reflection, however, shows that no case of causation is so simple as common thinking takes it to be. For the practical purposes of the *physician* and the *board of health* it is sufficient to have established a close connection in locality and time between the impure water and the primary cases of typhoid. But this induction rests upon others. It presupposes that it has already been ascertained that water may contain infectious matter. Moreover each case is in some degree unique. There are many contributing conditions to this uniqueness; such are: differences in individual constitution, habits of life, physical surroundings, etc. In short, whereas, for a definite practical purpose, the causal relation seems to be simple, it turns out to be, in every case, complex. Every effect is due to a complex assemblage of *conditions* from which, for the practical purpose in hand, we single out one and call it the Cause. A man fires a gun. Another man is thereby killed. The cause of his death is the impact of a bullet. But this event is a very complex physical and physiological problem. For the practical purposes of a coroner's jury it is enough to know what person caused the gun to go off. If the case be sent up for trial, the court will seek to determine what *mental* causes, *i.e.*, what motives and intentions, led to the firing of the gun. Suppose the jury decide that A met his death from a bullet fired by B from motives of revenge. Then *legally* and *morally* A's death was caused by B, but *physically* by a gun-shot wound. A psychologist might push the inquiry farther by asking what led B to seek revenge. Evidently, then, any effect depends upon a great variety of conditions and what is named the 'cause' is more or less arbitrary, depending upon one's interests. Philosophical reflection upon Causality raises three main problems: 1. *How* does the cause pass into the effect? 2. *When* does the cause cease and the effect begin? 3. What are we to regard as ultimate or final causes? Aristotle was the first to analyze carefully the notion of causality. He distinguished four kinds of cause: *material, formal, efficient,* and *final.* The material cause is the material out of which a thing is made, *e.g.*, wood is the material cause of a table; the formal cause is the form or pattern according to which a thing is made, *e.g.*, the pattern of a table in the maker's mind is the formal cause of the table; the efficient cause is the skilled manual power of the workman; the final cause is the *end* for which the thing is made, *e.g.*, the table to write or eat at. Aristotle in his metaphysical

system reduced the four causes to two—the *final cause* or *end* and the *mechanical* or *material cause*. Aristotle's analysis is important and has been very influential in European thought, but it does not touch the three problems raised above. Modern philosophy is largely concerned with the discussion of these problems. Hume (q.v.) was the first to give a radical answer to the first. He denied the possibility of our understanding *how* cause passes into effect. He said that, *a priori*, anything might produce anything else; that experience supplies only a constant conjunction of events; it never reveals the *reason* or *ground* of this conjunction. We cannot know why A should cause B rather than C, nor can we logically say that there is any necessity in the relation of A and B. The notion of a necessary causal relation is a fiction of the imagination, the resultant of *custom* or routine in experience. 'A cause is an object precedent and contiguous to another, and so united with it, that the idea of the one determines the mind to form the idea of the other, and the impression of the one to form a more lively idea of the other.' Our notions of causal connection are hence due solely to the course of our impressions and are subjective. It is due to the mind's 'propensity to feign' that we believe in necessary objective causal relations. Kant (q.v.) took up the problem at this point. He agreed with Hume that the idea of causation did not come from without the mind, but he maintained, against Hume, that this idea is not a passive product of an empirical conjunction of sense-impressions, nor a mental fiction, but an organizing principle of *reason*, by virtue of which the world we know is constituted. In other words, while Hume explains the whole content of human knowledge as a bundle of impressions which enter the mind from we know not where, and are isolated units devoid of inherent connections, Kant regards the knowable world as from the outset a creation of mind working according to the necessary and universal principles of rational activity of which 'causality' is one. Kant held, however, that there is a world of *things-in-themselves* to which this principle does not apply, viz., the *moral order* or *spiritual realm*. Kant did not make clear or consistent the relation between these two realms, and his successors, Fichte and Hegel (q.v.), abolishing the opposition between them, treated the whole world as ideal or rational. For them causality was an objective but subordinate principle. J. S. Mill (q.v.) traces the principle of causality back to a general induction that lies beyond all particular inductions. This really means that all special empirical inductions depend upon the universal validity of the causal principle. When we take it in this sense, the principle of causality means that all the elements and events of the knowable world mutually condition one another. In this sense, as Kant already saw, causality as a universal principle means the reciprocal determination of elements and events in a world. From this standpoint

we may briefly consider the three problems of causality. 1. The problem as to *how* cause passes into effect does not involve any inscrutable mystery. A cause means nothing except in relation to an effect and *vice-versa*. The typhoid germ is a typhoid germ just because it is followed in given situations by certain pathological symptoms. Things or events in nature *are* what they *do*. The difficulty in determining how cause becomes effect, in specific cases, is due to the complexity of conditions in the actual course of events. This difficulty is progressively overcome by scientific analysis. 2. The problem as to *when* the cause becomes the effect is one whose solution depends in every case upon the standpoint of the investigator. It is a more or less arbitrary procedure, due to our special interest, whether we shall say that the man died at the moment when the bullet hit him or when all the tissues of his body had ceased to function. Causation is a process in time and as such *continuous*. We may draw the dividing line wherever it suits our purpose and label what is before, cause and what is after, effect, but our dividing line is an ideal or logical one without sensible width or duration. The stream of actual events is continuous. 3. So long as we are dealing with events proceeding in time we are not entitled to speak of an 'absolute' or 'first' cause. The world in which the causal principle holds good must consist of elements in thoroughgoing reciprocity, *i.e.*, continuously acting and reacting, and, therefore mutually conditioning one another. Only the whole state of a world in time and space *now*, or at any other instant in its career, could properly be called an absolute cause, and, if *past* and *future* be real, then not even the whole state of things now is absolute and there must be an imperfection in the causal point of view. It involves confusion of thought to speak of an absolute *first* cause, as though somewhere in the dim past things somehow began to arise out of nothing. On the other hand man and God may be *free* or *ultimate* causes, *i.e.*, *first* causes, not in order of time but of rank in reality, if their thoughts and acts of will are not determined solely by antecedent events in the time-world. Such activities would be *timeless* and it is questionable whether the term 'causality,' which applies to events in time, should be used in this connection. It would be better to speak of *purposive* or *end-realizing* activity. And, reverting to Aristotle's analysis, it is to be noted that the present discussion relegates the consideration of 'final' cause to the term 'end.'

As to the question whether the notion of causality has originated from perceptual experience, *i.e.*, is empirical, or is mental (or innate) in origin, it is to be said that opposition between experience, and mental activity is overdrawn and hence, false. Experience, whether in its scientific or pre-scientific stages, means nothing except through the organizing activity of thought, and this organizing activity works under the stimulus of, and with the materials supplied by, sense-experience

CAUSE, n. *kawz* [F. *cause*—from L. *causa*, a cause: It. *causa:* comp. Gael. *cúis*, a thing, a cause]: the primary or original thing; a thing which produces another thing; anything which produces an effect; the person or thing that brings about or does something; that to which intelligent efforts are directed as working for a cause; a reason; a motive or inducement that urges or impels; a suit at law; a party or side: V. to effect or produce; to occasion; to create. CAU'SING, imp. CAUSED, pp. *kawzd*. CASUAL, a. *kawz'ăl*, relating to or expressing cause. CAUSALITY, n. *kaw-zăl'ĭ-tĭ*, agency of a cause; quality of causing. CAUSALLY, ad. *kawz'ăl-lĭ*. CAUSABLE, a. *kawz'ă-bl*, that may be caused. CAUSATION, n. *kaw-zā'shŭn*, the act or power of causing or producing. CAU'SATIVE, a. *-tĭv*, that effects as a cause. CAUSER, n. *kaw'zėr*, one who causes; an agent producing an effect. CAUSELESS, a. having no cause. CAUSELESSLY, ad. *-lĭ*, without reason or cause. CAUSE'LESSNESS, n. state of not having a reason or cause; unjust grounds or reasons. —SYN. of 'cause, n.': motive; inducement; reason; incitement; account; sake.

CAUSE AND EFFECT. See CAUSALITY.

CAUSEWAY, n. *kawz'wā* [F. *chauss'ée;* OF. *chaulcée*, and *caucie*, a raised way—from mid. L. *calcēta*, or *calcĕāta*, a made road—from L. *calcem*, lime: Sp. *calzada*, a pavement]: primarily a hardened raised roadway made with a mixture of lime so as to bear the tread of horses and general traffic; a raised roadway paved; a raised road over wet or marshy ground. CAUSEY, n. *kaw'zĭ*, the proper spelling for *causeway*. CAUSEY, v. to pave with blocks of stone. CAU'SEYED, a. *-zād*, or CAUSE'WAYED, a. *-wād*, paved with blocks of stone. TO KEEP THE CROWN OF THE CAUSEY, in *Scot. hist.*, to keep possession of the highest part of the principal paved street in defiance of all opponents; to throw down the gauntlet of defiance in a mutual feud; not to be driven to the wall.

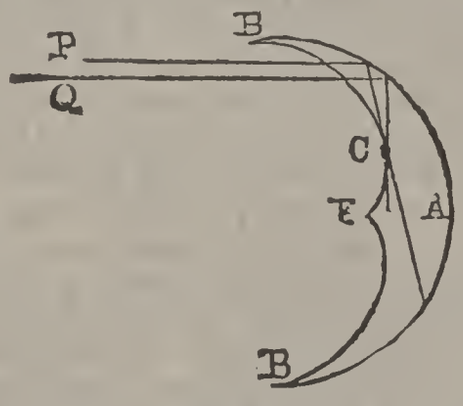
CAUSTIC, a. *kaws'tĭk*, or CAUS'TICAL, a. *-tĭ-kăl* [Gr. *kaustĭkos*, having the power to burn—from *kaiō*, I burn]: burning; corroding; that has power to destroy a living texture; biting or burning; sharp and biting, as speech. CAUS'TIC, n. a substance that acts like fire when applied to a living body, as nitrate of silver. CAUSTIC'ITY, n. *-tĭs'ĭ-tĭ*, the quality of being caustic. CAUSTIC CURVE, the curve whose envelope is formed by the rays reflected from a concave mirror.—SYN. of 'caustic, a.': pungent; cutting; stinging; searching; burning; corrosive; severe; satirical; sharp.

CAUSTIC, *kaws'tĭk*, in Medicine and in Chemistry; term applied to such substances as exert corroding or disintegrating action on the skin and flesh. *Lunar caustic* is nitrate of silver, and *common caustic* is potash. When used as a C. in medicine the substance is fused and cast into molds, which yield the caustic in small sticks the thickness of an ordinary

lead pencil, or rather less.—*Caustic* is also a term used in chemistry in an adjective sense—thus C. lime, or pure lime (CaO), as distinguished from mild lime, or the carbonate of lime ($CaO,CO_2$), C. magnesia (MgO), and mild magnesia ($MgO,CO_2$), etc.

CAUSTIC — CATACAUSTIC, *kăt-a-kaws'tĭk* — DIACAUS'TIC, *dī-a-*, in Optics: terms designating curves. Caustic is the name given to the curved line formed by the ultimate intersections of a system of rays reflected or refracted from a reflecting or refracting surface, when the reflection or refraction is inaccurate. When the caustic curve is formed by reflection, it is called the catacaustic—sometimes simply the caustic; when formed by refraction it is called the diacaustic curve. In mathematical language, a curve formed by the ultimate intersections of a system of lines drawn according to a given law is called the *envelope*, and is such that the lines are all tangents to it. As in a system of rays reflected or refracted by the same surface *all* follow the same law, it follows that the caustic is the envelope of reflected or refracted rays.

An example of the catacaustic is given in the annexed figure for the case of rays falling directly on a concave spherical mirror, BAB', from a point so distant as to be practically parallel. The curve may be said to be made up of an infinite number of points, such as C., where two very near rays, such as P, Q, intersect after reflection. This catacaustic is an epicycloid. The curve varies, of course, with the nature of the reflecting surface. In the case represented in the figure, the cusp point is at F, the principal focus. No such simple example can be given of the




diacaustic curve as that above given of the catacaustic. It is only in the simplest cases that the curve takes a recognizable form. In the case of refraction at a plane surface it is shown that the diacaustic curve is the evolute either of the hyperbola or ellipse, according as the refractive index of the medium is greater or less than unity.

A catacaustic may be seen on the surface of tea in a teacup about half full, by holding the circular rim to the sun's light. The space within the caustic curve is all brighter than that without, as it clearly should be, as *all* the light reflected affects that space, while no point without the curve is affected by more than the light reflected from half of the surface.

CAUTEL, n. *kaw'tĕl* [mid. L. *cautēla*, prudence, caution]: in *OE.*, caution; condition; limitation; a cunning trick. CAUTELOUS, a. *kaw'tĕl-ŭs*, artful; artfully cautious; wary. CAU'TELOUSLY, ad. *-lĭ*.

CAUTERY, n. *kaw'tėr-ĭ* [Gr. *kautērĭŏn*, a hot iron for marking—from *kaiō*, I burn: L. *cautērĭŭm*]: a burning or searing of living flesh with a hot iron, or by caustic medicine, so as to remove a diseased part. CAU'TERIZE, v. *-tėr-īz*, to burn or scar living flesh. CAU'TERI'ZING, imp. ADJ. burning; blistering: N. the act of burning or blistering. CAU'TERIZED, pp. *-īzd*. CAU'TERIZA'TION, n. *-ī-zā'shŭn*, the act of burning or searing with a hot iron; also CAU'TERISM, n. *-ĭzm*, the application of caustics: see BLEEDING: MOXA.

CAUTERY: an instrument employed in medical practice to burn or sear the skin or deeper portions. There are three varieties of cautery, viz.: (1) the actual cautery, an iron heated in the fire; (2) the thermo-cautery, or Paquelin-cautery, a hollow platinum tip filled with spongy platinum, which, when once heated over a flame, is kept hot by the vapor of benzol; (3) the galvano-cautery in which a wire is heated by the electric current. The cautery is employed for a variety of purposes. As a counter-irritant the instrument is applied at a black heat or a dull red heat. To arrest bleeding from an artery in a position when it cannot be ligated, or general oozing from a wound, the cautery is used at dull red heat. As a severe counter-irritant, or when tissue, as a small tumor, is to be destroyed a bright red heat is employed. A white heat is used often in preference to the bright red heat, especially when a destruction of tissue is the object of the cauterization. The application of a cautery is very painful and the distress persists for a long time after the operation. The resultant burn should be treated in the same way as a burn resulting from accident: see BURNS.

CAUTION, n. *kaw'shŭn* [F. *caution*—from L. *cautiōnem*, a taking heed. It. *cauzione*]: great care in the midst of dangers; forethought; a prudent course of conduct; security for; an advice; a warning: V. to warn; to exhort; admonish; advise. CAU'TIONING, imp. CAU'TIONED, pp. *-shŭnd*. CAU'TIONARY, a. *-ėr-ĭ*, containing warning; given as a pledge. CAU'TIONER, n. in *Scot.*, one bound for another. CAU'TIONRY, n. *-rĭ*, in *Scot.*, suretyship; the obligation of suretyship. CAU'TIOUS, a. *-shŭs*, very careful in conduct; wary; watchful; discreet. CAU'TIOUSLY, ad. *-lĭ*, in a cautious manner; warily. CAU'TIOUSNESS, n. the quality of being cautious; vigilance; watchfulness; prudent care.—SYN. of 'cautious': careful; wary; circumspect; prudent; discreet; watchful; vigilant; heedful; thoughtful; anxious; scrupulous;—of 'caution, n.': prudence; watchfulness; circumspection; warning; admonition; care; forethought; heed; vigilance; providence; counsel; advice; injunction; security; bail; guaranty.

CAUTION, in the Law of Scotland, like Guaranty (q.v.)

in England: obligation undertaken by a second party, whereby he binds himself, failing the primary obligant, to fulfil his obligation, whether it be of a pecuniary nature or otherwise. See GUARANTEE ASSOCIATION.

CAUTION, for a cash credit: see CASH ACCOUNT.

CAUTION, JUDICIAL, in the Law of Scotland: form of protection for a creditor or for a debtor; of two kinds—one by warrant for appearance, the other by bond of presentation.

CAUTION, JURATORY: see POOR'S ROLL.

CAUVERIPURAM, or KAVERIPURAM, *kaw-ver-ĭ-pū′ ram:* town of the dist. of Coimbatoor, presidency of Madras, on the right bank of the Cauvery; lat. 11° 54′ n., and long. 77° 48′ e. It takes its name from the neighboring gorge of 30 m. in length through the Eastern Ghauts, along which the Cauvery finds a passage. Pop. 7,000.

CAUVERY, or KAVERI, *kaw′ver-ĭ:* river in the s. of Hindustan, rising in Curg, and flowing through Mysore and Madras, with a course of 472 m., into the Bay of Bengal by various mouths. Its delta, with a coast of 80 m., and extending inland 70 m., lies almost wholly in the district of Tanjore. The Cauvery is peculiarly available for irrigation; and for improving it in this respect a grant of £50,000 was sanctioned 1841. During the rainy season the stream is navigable for small craft.

CAVA, n.: see AVA.

CAVA, LA, *lâ kâ′vâ:* town of Italy, province of Salerno, 3½ m. n.w. of the town of Salerno. It is a flourishing place, with manufactures of silk, cotton, and pottery. About a mile from Cava is the celebrated Benedictine monastery of the Trinity, with its magnificent archives, containing 60,000 MSS. and 40,000 parchment rolls. Its library, formerly also rich in MSS. and rare printed books, has been dispersed. In the monastery church are the tombs of Queen Sibilla and of various anti-popes. Pop. 6,000.

CAVAIGNAC, *kâ-văn-yâk,* JACQUES MARIE EUGÈNE GODEFROY: French politician, son of Louis Eugène Cavaignac (q.v.): b. 1853, May 22; d. Saint Calais, Dept. of the Sarthe, 1905, Sept. 25. He studied at the Lycée Charlemagne, Lycée Louis le Grand, École Polytechnique, and École des Ponts et Chaussées, interrupting his studies long enough to serve in the Franco-Prussian war. In 1882 he was elected to the Chamber of Deputies, and in 1885 was appointed Under-Secretary of State. In the Panama revelations of 1892 he bore a conspicuous part. On the organization of the Bourgeois cabinet, 1895, Oct. 30, he was appointed Minister of War. In 1898, August, he added to the excitement over the Dreyfus prosecution by forcing Lieut.-Col. Henry to confess to a forgery of certain letters bearing on the Dreyfus case, and the accused officer committed suicide within a few hours. In the following month Cavaignac resigned his office. He was author of *The State and Tariffs of Railroads* (1883); and *Formation of Contemporary Prussia* (1891)

## CAVAIGNAC.

CAVAIGNAC, Jean Baptiste, *zhŏn bâp-tēst:* French revolutionist: b. Gourdon, 1762; d. Brussels, 1829, March 24. He became an advocate at the Parliament of Toulouse; and in the National Convention acted as deputy from the department of Haute-Garonne. He rose to be one of the leaders of the Mountain (Extreme Republicans), and, on his various dictatorial missions to the armies of the Republic, displayed the greatest energy, tact, and incorruptibility. He was a member of the Council of Five Hundred; and afterward became a councilor of State in Murat's kingdom of Naples. During the Hundred Days he acted as prefect of the Somme. He was banished as a regicide, at the second restoration.

CAVAIGNAC, Louis Eugène: 1802–1857, Oct.; b. Paris; educated in the Polytechnic school, and the *École d'Application* at Metz. He served first in the Morea, afterward in Africa (whither he was sent in 1832 into a kind of honorable exile, in consequence of a too free expression of opinion in favor of republican institutions),where he acquired great distinction by his energy and intrepidity. He was made chef de bataillon 1837, and rose to the rank of brigade-gen. 1844. In 1848,he was appointed gov.-gen. of Algeria, but in view of the impending revolutionary dangers, was called to Paris, he having also been elected as a delegate to the national assembly by the two departments of Lot and Seine. In the insurrection of June which followed, Cavaignac, as minister of war, had a most difficult task, and he evinced, during the four days and nights of the contest, remarkable presence of mind, firmness, and activity. His plan of action appeared strange and almost traitorous at the time. In opposition to the wishes of the national assembly, who desired that the troops should be dispersed over Paris, he divided his men into three separate bodies, which had to clear their several routes from obstacles in order to effect a reunion, streets and even quarters of the city being left for some time without military protection. Regarding the outbreak more as the beginning of a civil war than a mere insurrection he, in fact, met the insurgents in true order of battle. His operations were successful and his clemency was as remarkable as his generalship. When he had the power of assuming the dictatorship he resigned it into the hands of the national assembly, which appointed him president of the council. As a candidate for the presidency of the republic, when Louis Napoleon was elected, he received about a million and a half of votes. On the *coup d'état* of 1851, Dec., Cavaignac was arrested, but released after a short detention; and though he consistently refused to give in his adhesion to the empire he was permitted to reside in France without molestation. He died very suddenly of heart disease, at his country house near Tours, and was buried in the cemetery of Montmartre, Paris, in presence of many thousand spectators, including several republican leaders. In debates Cavaignac was remarkably unlike his countrymen, being not voluble and declamatory, but sober, clear, and moderate.

CAVAILLON, *kâ-vă-yōng′:* town of Provence, France, dept. of Vaucluse, on the right bank of the Durance, 14 m. s.e. of Avignon. It is badly built and kept, but has an important railway junction, a fine town house, a church of the 12th c., and the remains of a triumphal arch, probably of Constantine's time. Many ruins and Roman relics are found on the site of ancient Cabello, a short distance s. Cavaillon was long included in the Comtat Venaissin. It suffered from an earthquake 1731. Till the revolution, when its fortifications were destroyed, it was a bishop's see, and had several convents. It is the centre of a fertile dist., called the garden of Provence; and has a trade in dried fruits and raw silk, and manufactures of madder and vermicelli. Pop. of town, 5,164; commune, 8,034.

CAVALCADE, n. *kăv′ăl-kād* [F.— from It. *cavalcata*— from It. *cavallo,* a horse—from L. *caballus,* a horse (see CAVALRY)]: a procession of persons on horseback.

CAVALIER, *kăv-a-lēr′*, in Fortification: defense-work constructed on the *terre-plein* or level ground of a bastion. It rises to a height varying from 8 to 12 ft. above the rampart, and has a parapet about 6 ft. high. Its uses are to command any rising ground held by the enemy within cannon-shot; and to guard the curtain, or plain wall between two bastions, from being enfiladed. For these purposes it mounts heavy ordnance. It may be either curved or bounded by straight sides.

CAVALIER, *kâ-vâ-lyā′*, JEAN: abt. 1680—1740, May; Camisard chief; b. Ribaute, in Languedoc. He was the son of a peasant, a keeper of sheep, and a baker's apprentice, but fled from persecution to Geneva 1701, and returned 1702 to share the Protestant revolt in the Cévennes, of which he soon shared the chief command with Roland. He developed marked military skill, defeated the royal troops on the Ardèche 1703, Feb. 10, endured a defeat there a few days later and another at Tour-de-Bellot, Apr. 30, and retrieved them by a surprising series of victories. He made terms with the govt. at Nismes 1704, received a pension, a commission, and authority to raise a regiment of Camisards for service in Spain, but was repudiated by his comrades, and called traitor and coward. Ill-received by the king, he left France, married in Holland a lady who had been sought by Voltaire, went to England, and was sent with his regiment to Spain to serve under Lord Peterborough and Sir C. Shovel, 1705, May. At Almanza his men recognized a French regiment as foes in the Cévennes, and rushed into a hand-to-hand fight, in which Cavalier narrowly escaped death. Returning to England he was pensioned and at length made a maj.gen. and gov. of Jersey and then of the Isle of Wight. He died at Chelsea. Malesherbes, in a remarkable passage, summed up Cavalier's singular gifts of talent and character. *Memoirs of the War in the Cevennes, under Col. Cavalier,* probably by Galli, is little valued. See CAMISARDS.

CAVALIER POETS: properly speaking, the group of

lyric poets who belonged to the court and following of Charles I. and his son, from the time of the first warfare of the Revolution until the Restoration. The term is sometimes extended to include other poets of the time, who, though not followers of the king, wrote in the same style.

The origin of the cavalier poetry may be found in the poetry of the Elizabethan Court, and in some ways, resembles it, but the loyalty of the cavaliers to Charles, his tragic death, and the exile of his family, gave the poetry of the time marked characteristics of its own. Loyalty to Charles and to his son, unlike loyalty to Elizabeth, was personal more than patriotic; it served to revive, therefore, some of the most ideal conditions of chivalry. Charles became not so much the sovereign of a country as the head of an order of Knights; his exiled son became their leader under all skies. The sufferings that were the cost of their loyalty, their sense of a lost cause, and the long tradition of proud breeding that would bear all with outward lightness, made the pathos and the grace of the best cavalier poets. The Elizabethan largeness of manner never quite returned, and a lighter gracefulness continued to be a mark of the Cavaliers, as in Montrose's most famous lyric, *My Dear and Only Love.* In singleness and loftiness of devotion, in the actual sacrifice of his life for the cause, and in the natural, incidental place of literature in his career, Montrose is, perhaps, the ideal cavalier poet. Richard Lovelace (1618–1658), author of the best known cavalier lyric, *Tell Me Not, Sweet, I Am Unkind,* illustrates in his life, as does Montrose, the tragedy that often underlay this graceful verse, but the tragedy is here one of sentiment. He impoverished himself to give his fortune to the king. On returning from the wars abroad, he was imprisoned, and his *Lucasta,* Lucy Sacheverell, believing him dead, married some one else. Lovelace died, worn out by suffering and poverty. A similarly typical fate was that of Sir John Suckling (1609?–1642), who spent his fortune for the king, became an exile, and died abroad. He wrote several plays, and the clever 'Session of the Poets,' the model of much later criticism in light verse; his fame, however, is founded on his cavalier poems. In his life and in his writing he is neither so noble nor so pathetic as Montrose and Lovelace; but he is master of the reckless tone that finally characterized the school, the tone that had been caught so finely by George Wither (1588–1667) in his *Shall I, Wasting in Despair.* In his best lyric, the song from *Aglaura—Why so Pale and Wan, Fond Lover,* Suckling carries this bravado note to its logical conclusion of recklessness.

Among the numerous poets who wrote in the Cavalier manner, though not under strict Cavalier conditions, besides Herrick and Donne, already noticed, should be mentioned Edmund Waller, for his two perfect lyrics of compliment *O Girdle,* and *Go, Lovely Rose,* and Thomas Carew. The latter was perhaps the most gifted minor

poet of the time, with the exception of Herrick, and he had in full measure the rhetorical grace of the true Cavalier.

CAVALRY, n. *kăv'ăl-rĭ* [OF. *cavallerie*, horsemen—from It. *cavalleria*, knighthood, cavalry—from It. *cavallo;* Sp. *caballo;* F. *cheval*, a horse—from L. *caba1'lus;* Gr. *kaba1'lēs;* OE. *caple*, a horse: comp. Gael. *capall*, a war-horse—from *cath*, battle; *pall*, a horse]: the part of an army which fights on horseback; horse-soldiers. CAV'ALIER, n. *-ă-lēr* [It. *cavaliere:* F. *chevalier*]: a horseman; an armed horseman; a knight; a gay soldier; in *mil.*, an elevation of earth situated within a work overlooking the surrounding parts: ADJ. sprightly; gay; brave; generous; haughty. CAV'ALIERS, n. plu. *-lērz*, in *Eng. hist.*, the partisans of Charles I. in opposition to the roundheads (q.v.), or parliamentary party. CAV'ALIER'LY, ad. *-lĭ*, arrogantly; disdainfully. CAV'ALIER'NESS, n. a haughty and disdainful manner.

CAVALRY, *kăv'al-rĭ:* general name for horse-soldiers or troopers. The history of cavalry and its gradual evolution from the hordes of barbarian horsemen of ancient times, down to the modern regiments of lancers or dragoons, covers a vast field which cannot be sketched in a brief essay. The development of the American type of cavalry during the past half century is an interesting and profitable study because of the position now occupied by the United States in the world's affairs.

Until the reorganization of the United States Army in 1901 the proportion of the various arms was always determined through the expediency of the moment rather than upon any well-considered general plan. During the Revolutionary struggle, the early Indian wars, the War of 1812, and, in fact, until the discouragement of constant failure in 1833 to 1836 demanded a change of policy, the mounted service of the army was almost wholly performed by militia or volunteers. The absence of a properly organized contingent of cavalry during the Revolution enabled the young and energetic Tarleton to ride with his small force of dragoons almost at will through the southern Colonies. All the early Indian wars were treated as spasmodic outbreaks demanding temporary application of force, but requiring no provision for the future. The War of 1812 contained much discouragement, but its history records several marked incidents to prove the value of trained troops and the urgent need in a Republic of an organized body to keep alive a knowledge of military art and improvements applicable to warfare. The experience was ignored, however, and it was not until 1821 that a reorganization of the army was undertaken and then the cavalry was left out entirely. During the Black Hawk war a battalion of mounted rangers was called into service and was merged the following year (1833) into the new regiment of mounted troops, the First Dragoons, which constituted the first permanent cavalry regiment of the United States Army. The Second Dragoons was organized in 1836 especially for service in the Seminole

war, and the valuable services rendered, together with the increasing needs of protection for the Southwestern frontier, prevented the disbandment of this fine regiment. These two regiments of dragoons constituted the entire mounted force of a permanent character in service prior to the Mexican war. During this war the regiment of Mounted Rifles was organized and, although it fought as infantry for a time, it was reorganized as a mounted regiment at the close of the war and has continued in service since that time. In 1855 Congress authorized two regiments, the First and Second Cavalry, which were organized and sent at once to duty upon the Western frontier. During all the period from their organization until 1861 the regiments had retained their designations of Dragoons, Mounted Rifles, and Cavalry. The drill regulations in vogue during this period were adapted from those in use by the French army, and while they now appear somewhat cumbersome, they served well their purpose.

In 1861 Congress authorized the organization of the Third regiment of cavalry, but immediately after abolished the terms dragoons and mounted rifles, and designated all the regiments as cavalry, giving them numerical designations in the order of their original organization. It was not, however, until 1862 that the old regiments were given the same organization as the new regiment. Prior to this time the regiments were organized on the European model of five squadrons of two troops each. Both the regular and volunteer regiments were organized with 12 troops each and the tactical organization of squadrons of two troops each was continued. The dragoons had secured a high place upon the roll of honor through their gallantry and dash in the Mexican war, and all the regiments had emerged from the period of Indian conflicts with justifiable pride. All experience previous to the Civil War had been limited to meeting emergencies arising in dealing with cunning and relentless savages. A new field of action was now presented when the necessity arose for the organization of larger tactical bodies of cavalry than had ever before been required in this country. Millions were expended in putting into service volunteer cavalry regiments under the prevailing idea that patriotism made invincible soldiers. Much discouragement and an enormous waste of public funds resulted. It was only after a year or two of experience and a thorough weeding out that the Union cavalry became worthy of the reputation which quickly came in the wake of its great successes. The Confederate calvary was composed entirely of those who could supply their own mounts. This drew to that arm a class of young men accustomed to horseback riding from infancy and usually possessed of a knowledge of firearms. This gave them a great advantage over their opponents, which they maintained during all the early period of the Civil War. Inability to supply themselves with remounts, together with the gradual improvement of the Union cavalry, brought about a change, and during the last two years

of the War the services of the cavalry under Sheridan, Wilson, and other gallant leaders, placed upon the pages of history a continuous record of victories.

Throughout the Civil War the question of supplying the cavalry with horses was a very serious one. The waste of animals due to ignorance was great, but the widely extended field of operations, the difficulty of supplying forage, the improper use of cavalry, and the continuous fatigue incident to raids placed strains upon the powers of endurance of the horses which few could withstand. Deaths due to wounds received in battle constitute but an insignificant part of the losses of cavalry horses in war. It was with a view to both increased economy and efficiency that after a war experience of two years a cavalry bureau was established. An enormous number of horses broken down through excessive marching and fatigue were turned in at the several depots and recuperated sufficiently to be again issued. This was but a fraction of the whole number supplied, owing to the difficulty of returning worn-out horses from distant and isolated points. Some idea of war losses may be had from the statement that there were purchased during the fiscal year ending 1864, June 30, 188,718 horses. During the first eight months the cavalry of the Army of the Potomac was supplied with two complete remounts which required 40,000 horses. The total number of horses and mules required to keep up the supply was 500 a day, and the data collected showed that for every two men of the whole army one animal was required in the ranks or trains. The recent experience of the British army in South Africa indicates that the loss of animals in the Civil War was not exceptional and that whenever campaigns are undertaken in a sparsely settled country history will repeat itself.

The organization, equipment, and methods of employment of cavalry in the Civil War gradually became quite uniform and have since been clearly recognized as the American system. The cavalry was armed with breech-loading magazine carbines, while the infantry continued to the end of the war to use the muzzle-loading rifle. This accounted for the superiority of fire action whenever the cavalry fought dismounted. There was no inclination to avoid mounted fighting with sabre or pistol whenever cavalry was opposed by cavalry on suitable ground, but the most efficient fighting, and that which gave the best results, was accomplished by dismounted fire action. The regiments were uniformly armed with breech-loading carbine, pistol, and sabre. The horse equipment consisted of a McClellan saddle-tree covered with rawhide, a saddle blanket, a pair of small saddle-bags, halter and bridle with single rein and curb bit. The arms and equipment have continued to find favor and remain the same in name, but modernized and improved to the highest known standard. There is no stagnation in such matters and experimentation is continually going on with a view to improvement. At the present time the improved saddle-tree is covered

with stuffed russet leather and the saddle-bags are much larger than those formerly used, a change brought about by the necessities of frontier service subsequent to the Civil War. The new carbine will be second to none in the world in the essentials of penetration and trajectory.

The present organization of the cavalry regiments is the same as that adopted in 1862 except that a squadron now comprises four troops instead of two. This makes the number of squadrons in each regiment three, which corresponds with the number of majors and admits of treating the squadron both as an administrative and tactical unit. The number of regular regiments continued at six throughout the Civil War, but was increased to 10 in 1866, because of the requirements of protection for the frontier. As the Indian lands became circumscribed by the settlements, some of the regiments were withdrawn from the frontiers and larger garrisons were established with a view to better instruction. The school of practice which existed during the continuance of Indian hostilities could not well be improved upon as a means of development of self-reliance, woodcraft, and the ability to care for one's self generally in the field. The cessation of savage warfare made it necessary to devise schemes of instruction, having for their object the training of the younger generation of soldiers in campaign duties. Although the American cavalry has not been tested in mounted combat with the cavalry of any of the great military powers of modern Europe, it has proved its efficiency and worth upon many fields. During the Santiago campaign of 1898, in the island of Cuba, owing to insufficient transports, the regular cavalry division participated dismounted. The regiments performed every duty required of the infantry and sustained the reputation for gallantry and efficiency won upon many previous fields of the Civil and Indian wars. The same degree of success followed the cavalry operations in China and the Philippines. The continuance of the insurgent warfare, together with the conditions existing in China, made it necessary to reorganize the United States army and by an increase of its personnel to make practicable the release from active service of about 35,000 volunteers who had been enlisted and sent across the seas at great expense.

In undertaking this reorganization, the experience of the past 50 years was carefully studied and many changes introduced, although as a matter both of expediency and compromise many desirable reforms were omitted. Notwithstanding the prevailing political prejudices against modification of the military system, there is no more conservative institution in all America than the regular army of the United States. In determining upon the organization of the cavalry, and of the field artillery also, it was recognized that the organized national guard of the country is composed almost wholly of infantry The expense of mounted troops is very great and it is quite certain that at the outbreak of war of any magnitude,

no reliance could be placed upon volunteer cavalry for mounted action within a less period than one year. Under the last reorganization of the army, a cavalry force of 15 regiments was provided. The American regiment is composed of three squadrons of four troops each, with a minimum number of 65 and a war strength of 100 men to each troop. The European and British cavalry still retain the small squadron of two troops and with four or five squadrons to each regiment. The American cavalry squadron with ranks completely filled to war strength, would be somewhat unwieldy, but the numbers have been fixed as the result of much experience, all of which tends to prove that troops in barracks never march to the field with full ranks, and that after a brief campaign the numbers become still further reduced through weeding out of unfit men and horses. Every effort is made to perfect the organization and equipment but some of the most pronounced lessons of the Civil War are still neglected. The recently authorized general staff corps is regarded as the means through which our past and future military experiences will be profitably studied and the results made available for practical application in the regular and volunteer armies, which, under the laws of the country, constitute, in time of war, the 'Army of the United States.'

CAVALRY TACTICS: duties, place, and movements of mounted troops, and proportion of such troops to other soldiers in an army. Authorities differ concerning the proportion that ought to be observed between cavalry and infantry in an army; in France and Austria, the ratio is about 1 to 5; in Prussia and Bavaria, 1 to 4; in Russia, 1 to 6; in England, 1 to 8.

So far as concerns actual duties, heavy cavalry charge the enemy's cavalry and infantry, attack the guns, and cover a retreat, while the light cavalry make reconnaissances, carry dispatches and messages, maintain outposts, supply pickets, scour the country for forage, aid the commissariat, pursue the enemy, and strive to screen the movements of the infantry by their rapid maneuvers on the front and flanks of their army. A cavalry horse will walk 4 m. in an hour on general service, trot 8 m. in maneuvering, and gallop 11 m. in making a charge. The cavalry usually attack in line against cavalry, *en échelon* against artillery, and in column against infantry. When an attack is about to be made the cavalry usually group into three bodies—the attacking, the supporting, and the reserve. The United States army regulations provide that the cavalry in battle should be in *échelon* at the centre and on the wings; should not gallop until charging; should never halt to receive a charge, but go to meet it, or else retire maneuvering; should reserve one-third of its squadrons for pursuit or to meet a reverse—the reserve squadrons being not in a second line with intervals, but in *échelon* or in column either abreast of, or in the rear of, one of the wings.

Close combat and hand-to-hand struggle are the province of cavalry; infantry and artillery may fight at a distance,

but cavalry cannot. It is rare that two bodies of cavalry stand to fight each other; the weaker of the two, or the less resolute, usually turns and gallops off. The work to be done by the horse is to pursue, to overwhelm, to cut down. They cannot wait to receive an attack like infantry. They must either pursue or retreat; and on this account it has been said, 'rest is incompatible with cavalry.' The infantry and artillery more frequently secure the victory; but the cavalry prepare the way for doing this—capture prisoners and trophies, pursue the flying enemy, rapidly succor a menaced point, and cover the retreat of infantry and artillery, if retreat be necessary. Cavalry is necessary to finish work mainly done by others; and, without its aid, signal success is seldom obtained on the field. Many of the brilliant achievements of the British in 1857 and the following year, in India, were rendered almost nugatory by the paucity of cavalry, while, as a contrast, the German victories of 1870 were enhanced by the splendid services of their uhlans and other light cavalry.

CAVAN, *kăv'an:* inland county in the s. of Ulster, Ireland; in the narrowest part of the island, 18 m. from the Atlantic, and 20 from the Irish Sea; area 746 sq. m. About three-fourths is arable. Bogs and hills, with many small lakes, are in the n.w. The chief rivers are the Erne, the Woodford, and the Annalee. The e. half of Cavan rests on clay-slate and grauwacke; the mountain district in the w. is carboniferous formation. Of minerals, Cavan affords coal, iron, lead, and copper, with many mineral springs. The climate is cold and damp; and the soil is poor, wet, and clayey, except along the streams. The chief crops are oats, potatoes, turnips, and flax. The farms are small. Agriculture is the chief industry, but linen is manufactured to a considerable extent. Chief towns—Cavan, Bailieborough, and Belturbet. Cavan returns two members to parliament. Pop. (1901) 97,541.

CAVAN: capital of Cavan co., Ireland, on a branch of the Annalee, 70 m. n.w. of Dublin, with which it is connected by the Irish N.W. railway. The suburbs are chiefly wretched cabins. The principal buildings are in the west outskirts. A public garden was bequeathed by a late Lady Farnham, and the beautiful demesne of Lord Farnham lies between Cavan and Lough Oughter, which is about five m. w. Agriculture is the chief industry. Pop. 3,000.

CAVARZERE, *kâv-âr-zā'rā:* town of n. Italy, province of Venice, 22 m. s.s.w. of Venice city; on the Adige, which divides it into two parts called Cavarzere *destro* and Cavarzere *sinistro.* Its soil is fertile, and its inhabitants carry on active trade in cattle, silk, and wood for fuel. Pop. 5,000.

CAVASS, *ka-văs':* in *Turkey,* a police-officer: see Cawass.

CAVATINA, n. *kăv'ă-tē'nă* [It.]: in *music,* short form of operatic air, of a soft character, differing from the ordinary aria in consisting only of one part, and that spun out more in the form of a song. Modern composers have,

however, disregarded this difference. Rossini mixes both. Weber, in his operas, adds an introduction or a recitative. The most perfect specimen of the cavatina is that in Meyerbeer's opera of *Robert the Devil.*

CAVAZION, n. *kă-vā'zhŭn* [It. *cavazione,* excavation]: in *arch.,* an excavation for the foundation of a building or for cellarage.

CAVE, n. *kāv* [F. *cave*—from L. *căvus,* hollow; Fin. *koppa,* anything hollowed or vaulted]: a hollow place under earth or rocks as at the side of a hill; a den; a cavern; V. to hollow or scoop out; to dwell in a cave; (followed by IN), to fall in, as earth in digging a pit. CAV'ING, imp. CAVED, pp. *kāvd.* CAVITY, n. *kăv'ĭ-tĭ,* a hollow in anything. CAVE-EARTH, the reddish calcareous earth accumulated in anc. caverns. CAVE-BEAR, CAVE-LION, etc., extinct animals whose bones are found fossil in caverns. [See CAVES.]

CAVE, *kāv,* EDWARD: 1691–1754, Jan.; b. Newton, Warwickshire, England: founder of the *Gentleman's Magazine,* the first literary journal of the kind. He obtained a good education at Rugby; and after many vicissitudes, became apprentice to a printer. Obtaining money enough to set up a small printing-office, he projected the *Gentleman's Magazine,* which has now existed more than a century and a quarter. He was the friend and early patron of Samuel Johnson.

CAVE, HENRY WILLIAM: English artist and traveler: b. Brackley, Northamptonshire, 1854. He was educated at Queen's College, Oxford, and in 1877 founded the commercial establishment of Cave & Company at Colombo, retiring in 1887. He has published *Colombo and the Kelani Valley* (1893); *Kandy and Peradeniya* (1894); *Nuwara Eliya and Adam's Peak* (1895); *The Ruined Cities of Ceylon* (1897); *Golden Tips,* a description of Ceylon (1900); etc.

CAVE, WILLIAM: 1637, Dec.—1713, Aug. 4; b. Pickwell, Leicestershire, England: clergyman and scholar. He studied at Cambridge; was appointed to the vicarage of Islington 1662; afterward to the rectory of Allhallows the Great, London; and in 1690 to the vicarage of Isleworth, Middlesex. He died at Windsor. He was the author of many religious works, the most important being the *Lives of the Apostles, Lives of the Fathers,* and *Primitive Christianity,* which were standard works.

CAVE ANIMALS, or CAVE FAUNA: an assemblage of animals of different classes which are blind and either totally or partially eyeless.

*Distribution of Cave-Regions.*—In the United States the caves containing permanent inhabitants are situated south of the former region of glaciers, that is, in Mammoth and adjoining caves in Kentucky; Wyandotte and smaller caves in Indiana; caves in Carter county, Ky., and Weyer's and the Luray caverns in Virginia. These regions have been honeycombed by the action of subterranean streams now dried up. With these systems of subterranean drain-

age are associated sink-holes, and deep dark wells inhabited by blind fish, cray-fish, and other crustaceans of the same species as those inhabiting the caves. Other caves more or less tenanted by blind forms are situated in Mexico, in open sink-holes in Cuba, as well as in caves and wells in New Zealand. Rich cave faunæ are found in southern France, and in limestone deposits near or at the base of the Pyrenees, though the great grotto of Adelsberg, near Trieste, is the classic abode of cavernicolous forms, including the blind triton, eyeless beetles, etc.

Mammoth Cave (q.v.) is the type of a great system of underground passages and chambers where these blind animals live. The total length of its avenues is about 150 miles. In the older and dry passages and chambers there is little life; the animals are mostly found in the newer and damp places, the aquatic forms living in the streams and pools. There is no vegetation except a few scattered molds and fungi. The food is scanty, and the animals are carniverous, preying on one another. The temperature is very equable, the mean for the winter months being 53° F., and for the summer 54° F. The number of species thus far detected in Mammoth Cave is about 75, and in other American caves about 40 or 50 more, while several hundred kinds exist in European caverns.

*Blind Fishes.*—The most striking and interesting form in Mammoth Cave is the blind-fish (*Amblyopsis spelæus*). It is about four inches long, colorless, and blind, the eyes being vestigial. This fish seeks the dark and shuns the light, being much disturbed by a lighted match or bright sunlight, or even by a ray of light. In well-fed adult specimens there is no external indication of an eye; but in young ones, before reaching a length of two inches, the eyes can be distinctly seen, owing to their pigment, which is lost in the adult. The optic nerve can be traced in examples under an inch in length, but in large specimens the nerve to the brain cannot be followed. The lens is much reduced, and in fact, the vestiges of the eyes are exceedingly variable. This will apply to the eyes of other blind fishes and blind insects, crustacea, etc. While the sense of sight is lost, that of touch in the blind-fish, as in most other cave animals, is exalted. *Amblyopsis* is provided with tactile papillæ, arranged in ridges on the front and sides of the head. Though the ears of this blind-fish are said by some authorities to be largely developed, others state that they manifest total indifference to light and sound. They are said to show extreme timidity and caution in their movements.

*Blind Salamanders.*—A still higher type of vertebrate, two species of salamanders have become adapted to cave life, losing their eyesight by disuse. The species of the genus *Spelerpes* frequent damp, dark situations and the entrances to caves. An allied form (*Typhlotriton spelæus*) is distinctly a cavernicolous as distinguished from a twilight species, and has never been found outside of caves.

Its eyes show early stages of degeneration. It inhabits caves in southwestern Missouri, and occurs under rocks in and out of water. Still another salamander, whose eyes are the most degenerate known among amphibians, is the *Typhlomolge rathbuni*. It lives in subterranean streams, tapped by an artesian and also a surface well, near San Marcos, Texas, and likewise occurs in one of the caves near that town. Its remarkably long and slender legs are too weak to support its body when out of water. The eyes of this salamander are in many respects much more degenerate than those of the *Proteus* of Austrian caves.

The lower animals tell the same story of degeneration, blindness and total or partial atrophy of the eye, together with loss of color, and, in a more striking way, the compensation for the loss of vision by a great increase in length of the antennæ and other appendages, or the growth of long, slender tactile bristles.

*Blind Crayfish and Other Crustacea.*—The blind crayfish (*Orconectes pellucidus*) is a common cave form. It differs from its out-of-door allies in being blind, slender-bodied and colorless. The eyes are present, but they are much reduced in size, and destitute of a cornea and of black pigment, while the colorless body is slender. It is not only blind, but deaf, and exceedingly timid and cautious in its movements. Other blind or eyeless crustaceans are various kinds of amphipods and isopods, both aquatic and terrestrial, of which species of *Cœcidotea*, allied to the *Asellus*, a common crustacean of fresh waters, are the most abundant, and form the food-supply of the blind crayfish.

*Blind Insects.*—The eyeless beetles of caves (*Anophthalmi*) have no vestige of eye or of optic nerves and ganglia, while their bodies and appendages are slender. They grope their way about by means of very long tactile bristles. Other beetles, such as *Adelops*, which have retained vestiges of the outer eye; some spiders comprising an eyeless species, and others with eyes varying in size, some much reduced, spin little webs on the walls of the chambers. Among the harvestmen some (*Phalangodes*) have extraordinarily long legs; while the *Campodea*, a wingless insect of the Mammoth and other caves of the United States and Europe, differs from the outdoor form in its antennæ and abdominal appendages, being greatly exaggerated in length. There are also mites, myriapods, primitive wingless insects (*Podurans*), a few flies, worms, and infusorians.

*Origin*—The fauna of caves is evidently composed of the descendants of individuals which have been carried by various means into the subterranean passages, have become adapted to life in perpetual darkness, becoming isolated, and thus, as long as they are subjected to their peculiar environment, breed true to their species, and show no tendency to relapse to their originally eyed condition. The absence of the stimulus of light causes

the eyes, through disuse, to undergo reduction and atrophy. With this goes, in certain forms, the loss of the optic ganglia and optic nerves. On the other hand, certain other parts of the body, as the result of use, become extraordinarily developed.; such are the tactile papillæ of the blind-fish, the greatly lengthened feelers and legs, the long, delicate tactile hairs of various *Crustacea* and insects. It is plainly the case that the enhanced development of these organs is the result of frequent use of exercise. There is no need of invoking natural selection, these parts developing as the direct result of the change of habits, of the new needs of the animals to feel their way about, forced to adopt such habits by the abnormal conditions of their existence. Although the animals are members of very different groups, inheriting very different structures and habits, yet all genuine cave animals resemble each other in being pale, and ghost-like, in the exaltation of the tactile sense, and the corresponding increase in length and delicacy of the extremities.

Consult: A. S. Packard, *The Cave Fauna of North America; Memoirs of the National Academy of Sciences* (Vol. VI.); C. H. Eigenmann, *The Eyes of the Blind Vertebrates of North America* (Archiv Entwickelungsmechaniks der Organismen, Vol. VIII.); and other papers. Consult also the writings of Tellkampf, Schiödte, Cope, Putnam, Garman, Henshaw, Joseph, Chilton, and others.

**CAVEAT**, n. *kā′vī-ăt* [L. *cavĕāt*, let him beware]: in *law* a judicial warning or caution; intimation to stay proceedings; consisting in an intimation by the party interested to the proper officer, to prevent him from taking any step without such intimation being made to the said party as shall enable him to appear and object. Ca′veätor, n. one who. Caveat emptor [Latin]: notice to a buyer that he must beware or be watchful concerning his rights.

CAVE-DWELLERS: prehistoric men dwelling in caves, and cave-dwelling animals of corresponding periods; also cave-dwelling men of more recent historic times. Long before the dawn of authentic history, primitive races of men dwelt in large numbers in natural caverns, which were often shaped, enlarged, fortified, or furnished by the occupants. The ages in which the prehistoric cave-dwellers lived are usually called the Palæolithic, or Ancient Stone Age, and the Neolithic, or Later Stone Age. Many caves have been explored in England, France, Belgium, Spain, America, and Australia; notably a famous cave known as Kent's Hole, in Devonshire, England, caves at Brixham and Périgord, and the Madeleine Cave on the Vezère river, France. In the Neolithic Age numerous human skeletons are found, but very few in the earlier age. It is believed that some of these human remains possibly antedate the glacial drift period of Europe. The remains found in the caves are ordinarily overlaid with deposits of varying thickness and different qualities. In Kent's Hole, near Torquay, there were found four

distinct strata of deposits overlying the cavern floor: the surface layer a dark earth containing Neolithic and Roman remains, the second layer a thin stalagmite floor, the third a stratum of red earth containing flint implements and bones of animals, and the lowest deposit constituting a hard breccia, in which human and animals remains of a ruder and earlier period were found.

Caves in which the bones of extinct animals are found owe their origin, for the most part, to the action of rain-water on limestone rocks, in which they most frequently occur. The deposit contained in these caverns usually consists of clay, sand, and gravel combined. In this deposit are imbedded remains of animals, and stones either angular or rounded. The bones scarcely ever occur in entire skeletons, but are scattered in such a way as to show that they must have been moved from their places subsequent to the death of the animals. They seldom, however, have suffered much from friction; and at times look so fresh, that but for the complete abstraction of the animal matter which they must have originally contained, they might be supposed to have been brought into the cavern a few weeks before. The most remarkable fact with regard to these bones is that the most of them belong to animals which do not now exist at all, or exist only in regions far remote from those where the caverns occur. Some of those found in European caverns belong to animals now found only in the tropical or sub-tropical regions, and others are the remains of animals now living in more northerly areas, while others, although evidently molded on types similar to those of existing animals, differ from them in several essential features. To add to the difficulty of explanation, human bones have repeatedly been found mingled with those of the lower animals. The evidence of the cave remains proves the co-existence of man with animals not now living in the same areas; of these animals some are now extinct, as the cave-bear and cave-lion, the mammoth, and mastodon, the tichorhine rhinoceros, etc.; others have only migrated. Thus the reindeer is no longer found in southern Europe; the *Hyæna crocuta*, found in the Gibraltar caves, now lives in South Africa. The ibex, the chamois, and a species of ground-squirrel, once lived in the Dordogne, but are now found only on the heights of the Alps and Pyrenees. Thus it is evident that a considerable change of climate has taken place in Europe. Man's relation to these extinct animals, and his existence at the time these changes took place, are demonstrated by the discovery in the caves of human bones and worked flints beneath layers of hyæna droppings, as in Wokey's Hole, near Wells; mixed up indiscriminately, as in Kent's Hole, with bones of elephant, rhinoceros, hyæna, etc.; and by the fact that many bones of the extinct animals are split up, evidently for the sake of the marrow. In the Dordogne and Savigné caves fragments of horn have been found bearing carved—or, rather, deeply scratched—

outline figures of ibex, reindeer, and mammoth. The bones of the reindeer are found in large numbers, some of them showing that the flesh had probably been cooked. It is believed that this animal was a chief article of food with the cave-dwellers. Implements of flint and stone are mingled with the remains. Among the non-extinct animals known to have dwelt in the caves with men, or to have been carried there for food, or to furnish their skins for clothing, are the mammoth, musk-ox, horse, dog, bison, rhinoceros, and hyæna. In 1820 Dr. Buckland explored a cave at Kirkdale, in Yorkshire, England, and proved that it had been inhabited by great numbers of hyænas that had dragged into it many other animals. Among the remains found in Europe nothing has been shown to indicate that the cave-dwellers domesticated any animals, or used them for anything but food and clothing. Needles of ivory are found, leading to the inference that they knew how to sew skins together for garments. No traces of agriculture, and no implements used in agriculture, have been discovered. Lance-heads, arrow-heads, hammers, saws made of flint, and harpoons, have been found. The great number of fish-bones found, showing marks of cookery, indicates that they engaged in fishing extensively, but the variety of bird remains indicates their inferior skill in catching or killing winged creatures. They probably had no spinning implements and did not know the art of pottery.

In the cave of Cro-Magnon in the south of France skeletons were found that are accepted by palæontologists as those of genuine cavemen. Taking them as the type, it is inferred that the Palæolithic cave-dwellers were a tall, powerfully built race, with long narrow skulls, broad faces, and powerful jaws. Investigations in the Belgian caves seem to indicate that the cave-men of that region were of much smaller stature, but with symmetrical, well-shaped bodies. The traces of the most ancient cave-men found in Europe are believed to identify them ethnically with the Esquimau. The bone needles, harpoons, arrow- and spear-heads, and scrapers, are much like those of the Esquimaux. The designs of their carvings also are much the same, as well as their habit of accumulating piles of bones around their dwellings, which they were accustomed to split for the marrow. The habitat of animals now common in the Arctic region, where the Esquimaux live, has shifted to the north, and their migration has been traced with the subsidence of climates, from Europe to the regions where the species that have survived now live. It is believed that the Esquimau in the same way is the descendant of the Palæolithic cave-dweller, who has gradually receded to the north.

The caves belonging to the Neolithic Age yield remains classified into three ages: Neolithic (proper), Bronze, and Iron. They are widely distributed throughout Europe, and contain celts, flints, flakes, rude pottery,

bones of the pig, dog, horse, sheep, and goat, with those of many wild animals still indigenous in Europe, and of some that are extinct, and many human skeletons. The latter show that the people populated the caves in great numbers. They were a race of short-statured people having common resemblances in various regions of Europe. They were in some regions cannibals, and slightly in advance of the Palæolithic races in the variety of their implements and occupations. Their gradual progress down to the dawn of history is shown by the substitution of bronze, and then of iron, in place of the stone of earlier ages, for implements and weapons.

In America, caves with human remains have been investigated in Brazil, Ohio, Kentucky, Minnesota, Arizona, Colorado, Nevada, Utah, and California. There are remains that have been deposited within the period of authentic history. The conclusions drawn from cave remains, as to the antiquity of man, are subject to the doubts that beset all calculations as to the rate of deposit of geological strata and to the rapidity of changes in climates and zoological characteristics.

CAVEN, William, Canadian educator: b. Kirkcolm, Scotland, 1830, Dec. 26; d. Toronto, Canada, 1904, Dec. 1. He went to Canada with his father in 1847, studied theology at London, Ont., was ordained minister of the United Presbyterian Church, 1852, and was pastor of St. Mary's and Downie, 1852–65. In 1866 he became professor of exegetical theology and biblical criticism in Knox College, Toronto, and principal in 1873, having been chairman of the college board since 1870. He was a promoter of the union of the Canadian Presbyterian churches, moderator of the Church in 1875, and president of the Ontario Teachers' Association, 1877.

CAVENDISH, n. *kăv'ĕn-dĭsh*: an American plug tobacco for chewing and smoking.

CAVENDISH, *kăv'ĕn-dĭsh*, Frederick Charles, Lord: 1836–82, May 6; second son of the Duke of Devonshire and Lady Blanche Howard. He was educated at Trinity College, Cambridge, was private sec. to Earl Granville 1859–64, and M.P. for the northern division of the West Riding 1865–82. He married the second daughter of Lord Lyttelton 1864. He acted as private sec. to Mr. Gladstone for a brief period in 1872, and was made a lord of the treasury 1873. He was appointed chief sec. for Ireland on William E. Forster's retirement, 1882, Apr. A few weeks later he was murdered with Mr. Burke the under-sec., while walking in Phœnix park adjoining Dublin castle, in broad daylight, between 7 and 8 P.M. The crime excited profound sensation in Europe and America, and the murderers escaped detection for some months, but were brought to justice 1883, Jan. Lord C. was of amiable character highly esteemed and newly in office; the plot which proved fatal to him was laid against Mr. Burke, an old official.

CAVENDISH, Henry: natural philosopher: 1731, Oct. 10—1810, Feb.; b. Nice, Italy; son of Lord Charles Cavendish, and nephew of the third Duke of Devonshire. He studied at Cambridge, and applied himself through life to scientific investigations. Wealth, bequeathed to him by an uncle, enabled him to follow uninterruptedly his favorite pursuits. He almost secluded himself from the world, and was so averse to meet with strangers that he had his library—a magnificent one—built at a distance from his house, so that he might not encounter persons coming to consult it; and his female domestic servants had orders to keep out of his sight, on pain of dismissal. His dinner he ordered daily by a note placed on the hall-table. He died unmarried, leaving considerably more than a million sterling to his relatives. As a philosopher, Cavendish is entitled to the highest rank. To him it may almost be said is due the foundation of pneumatic chemistry, for prior to his time it had hardly an existence. In 1760, he discovered the extreme levity of inflammable air, now known as hydrogen gas—a discovery which led to balloon experiments, and projects for aërial navigation; and, later, he ascertained that water resulted from the union of two gases—a discovery, however, to which Watt (q.v.) is supposed to have an equal claim. The accuracy and completeness of Cavendish's processes are remarkable. So high an authority as Sir Humphry Davy declared, that they 'were all of a finished nature, and though many of them were performed in the very infancy of chemical science, yet their accuracy and their beauty have remained unimpaired.' Cavendish wrote also on astronomical instruments and his *Electrical Researches* (1771–81) were edited by Prof. Clerk Maxwell (1879).

CAVENDISH, Margaret, Duchess of Newcastle: second wife of William Duke of Newcastle; b about the end of the reign of James I., d. 1673: remarkable instance of a person afflicted with the *cacoëthes scribendi*, who had no capacity whatever for writing. She produced no less than 13 folio vols., 10 of which were printed, treating, indifferently, on all subjects in prose and poetry, and careless in all, both as to grammar and style. Her mania for scribbling kept up her maids at night, so that, if she chanced to wake with anything on her mind, they might be ready to note it down at once.

CAVENDISH, Thomas: 1560–92: navigator; b. Trimley St. Martin, Suffolk. He spent a short time at Corpus Christi College, Cambridge, and left to live at court. Having spent his patrimony, he fitted out a ship and went to Va., 1585, with Sir R. Grenville. 1586, July 1, he sailed from Plymouth with three vessels of 120, 60, and 40 tons; entered the Straits of Magellan, 1587, Jan. 6, spent a month there; cruised along the coasts of Chili, Peru, and Mexico, destroying sundry towns and 19 ships, and off the California coast took the 700-ton galleon

*Santa Anna*, belonging to the Spanish king, with a rich cargo in goods and money. Returning with his booty by the Cape of Good Hope, he reached Plymouth 1588, Sep. 9, having circumnavigated the globe in less time than either of his predecessors; it is said that his topmast was covered with cloth of gold, his sails of damask, and the sailors clad in silk. 1591, Aug. 26, he started again with five ships, but fortune had deserted him; his crews mutinied and compelled him to return, and he died of grief off the coast of Brazil. He had discovered and named the harbor of Port Desire on the e. coast of Patagonia. He wrote a *Voyage to Magellanica* in 1586.

CAVENDISH, William, Duke of Newcastle: distinguished loyalist of the 17th c.: 1592–1676, Dec. 25, son of Sir Charles Cavendish, younger brother of the first Earl of Devonshire. His learning and winning address made him a favorite at the court of James I., who, 1610, made him a knight of the Bath. Other honors rapidly succeeded. In 1620, he was made a peer of the realm. Charles I., about 1628, gave him the title of Earl of Newcastle-upon-Tyne, and 1638 intrusted him with the tuition of his son, afterward Charles II. His support of the king during the contest with the parliamentary forces was munificent. He contributed £10,000 to the treasury, and raised a troop of 200 knights and gentlemen, who served at their own cost. As general of all the forces raised north of the Trent he had power to issue declarations, confer knighthood, coin money, and raise men; and the last part of his commission he executed with great zeal. The banquets Cavendish gave the king when he went north were magnificent enough to find record in history; one of them cost no less than £15,000, even in those days when money was more valuable than now. After the battle of Marston Moor, Cavendish, retired to the continent, where he resided, at times in great poverty, until the restoration. On his return, he was created Duke of Newcastle. On the continent, he applied himself to literature, and wrote a book on the management of horses, and several plays, not of a character to increase any man's reputation for intelligence.

CAVENDISH, William, English statesman: b. 1640, Jan. 25; d. 1707, Aug. 18. He was first Duke of Devonshire, was the son of William, third Earl of Devonshire, and was instructed with great care in classical literature. On various occasions he distinguished himself by his spirit and valor, and in 1677 began that opposition to the arbitrary measures of the ministers of Charles II. which caused him to be regarded as one of the most determined friends of the liberties of his country. Intimately connected with Lord Russell, he joined him in his efforts for the security of free government and the Protestant religion. On the trial of Lord Russell he appeared as a witness in his favor, and offered to assist him in escaping, after he had been sentenced to death, by changing clothes with him in prison. In 1684 having succeeded

to his father's title, and being regarded as one of the most formidable opponents of the arbitary designs of King James II., attempts were made to intimidate him, but without success. He took an active part in promoting the revolution, and was one of the first who declared for the Prince of Orange. His services were rewarded with the dignity of Duke of Devonshire. He still, however, maintained an independent bearing in Parliament during the remaining years of his life.

CAVENDISH COLLEGE: founded at Cambridge, England, 1873, named after William Cavendish, Duke of Devonshire, and chancellor of the Univ. of Cambridge. It was founded by a joint-stock company, the County College Association. Its object is to enable young men to pass through a university course at an earlier age and at less expense than in the older colleges of the university, and thus especially to benefit those preparing for the church or for teaching. Nine trustees hold office for life. Vacancies are filled by nominations of the shareholders, subject to approval by the surviving trustees. The trustees are *ex officio* members of the board of directors, with nine others annually elected.

The erection of the present buildings was begun 1876. There are accommodations for 300 students, who, as a rule, may go to reside in the college at the age of 16. The annual cost of attendance is not to exceed 80 guineas. The chancellor of the univ. is the pres. of the college.

CAVERN, n. *kăv'ėrn* [F. *caverne*—from L. *caver'na*, a cavern—from L. *căvus*, hollow]: a large hollow place below the earth or rocks; a *cavern* is larger than a *cave*. CAV'ERNED, a. *-ėrnd*, or CAVERNOUS, a. *kăv'ėrn-ŭs*, full of caverns. CAVERNOUS, a. *kăv'ėrn-ŭs*, or *kăv-ėrn'ŭs*, in *med.* in *anat.*, with cavities. CAVERNULOUS, a. *kă-vėrn'-ū-lŭs*, full of little caves or hollows.

CA'VERY: see CAUVERY.

CAVERYPOR'AM: see CAUVERIPURAM.

CAVES AND CAVERNS. Some rocks such as rock salt, gypsum and limestone are readily soluble in water, when local solution is extensive cavities are formed which may be developed finally into large caves or caverns. In their production both the solvent and the mechanical action of water may be effective, the swift flow of water aiding the solvent power.

Underground water wears out passages for itself along joints and bedding planes, if the rock is soluble these planes become enlarged until they may form very extensive and intricate passages, low and lofty, broad and narrow. The widest underground chambers may reach a width of 300 feet while the total length of the chambers sometimes reaches 200 miles as in the case of Mammoth Cave (q.v.).

Limestones sometimes reach great thickness, they are widely distributed and in regions where underground waters play a prominent part in the drainage, these caves

are apt to abound. Whatever may be the region of caves those in the limestone regions are by far the most extensive and interesting. The head of waters of Green River, Kentucky is a good instance in this country, the Karst region of Carinthia and Illyria is a good example in Europe of cave phenomena. In such regions there is little or no surface drainage; it sinks into the earth and becomes underground. Funnel-shaped depressions are abundant; these communicate with the underground galleries of the caverns. These shallow circular pits are termed sink holes; they vary in width from a few feet to 2,500 feet or more. They are usually abundant and form the characteristic topography of cave regions. The roof of the cavern may fall in, forming a great depression, though a part may remain intact, forming a natural bridge.

After the cave is formed deposition takes place in it chiefly through deposition from solutions: water dripping from the roof may evaporate leaving a deposit of lime and this may grow into a stalactite, while the water which falls on the floor may leave a deposit, the stalagmite; the two may join, forming a column. The floor often becomes covered with deposits, frequently banded, this is termed travertine. These deposits add greatly to the beauty and variety of cave topography. Although caves occur most abundantly and attain the largest size in limestone rocks, yet they are found in other kinds. They occur in lava, where they may be formed on a small scale by the expansive force of steam; the larger caves in lava are due to the fact that while the outside of the lava flow cools, the interior portion while still molten flows away leaving a cavity which may be thirty or forty yards long, 10 yards wide, and 6 to 10 ft. high. One lava cave in Hawaii is 1200 feet long. Caves may be formed on either side of a fault plane; they are usually small and are frequently lined with finely crystallized minerals. Caves are formed by river erosion, though they are usually shallow. The ocean excavates large caves by washing out clay or other material of weak structure in the rocks, which does not offer very great resistance to the attack of the waves. After the weak material is removed, the cave may be greatly increased in size by the erosive action of the water. Waves plunge into these caverns often with great violence and wear away the rock rapidly. Caves are also opened up along the joint planes and other rock structures.

Caves have been used for places of abode by animals, especially the carnivora and the bats. The carnivora brought their prey inside and devoured them there, and in time numerous bones would accumulate, often imbedded in the cave deposits. Caves have thus become an important source of animal remains.

Prehistoric man also used caves as homes; this is especially true in the Old World. In the United States there is little evidence that man occupied caves perman-

ently. Important finds of skulls, skeletons, implements, and weapons have been made in the Old World caves; frequently, too, drawings or crude paintings, the work of early man, have been discovered on the walls of caves. In the Southwestern part of the United States, the early peoples inhabited caves to some extent, but they chiefly walled up the front of shallow recesses in cliff faces, thus making artificial caves; these peoples are known as the Cliff Dwellers (q.v.).

A great variety of fauna is found chiefly in the waters of modern caves; they are usually closely allied to species living outside in the neighborhood, but their underground life has tended to remove the pigment cells and to give them a blanched appearance, or a uniform color; it has also entirely or in a large measure deprived them of eyes.

CAVESSON, n. *kăv'ĕs-sŏn*, or CAVEZON, n. *kăv'ĕ-zŏn*, and CAUSSON, n. *kaws'sŏn* [F. *caveçon*, and *cavesson*, an iron instrument placed on the lip of horses: Sp. *cabezon*, a nose-band]: a particular kind of nose-band put upon an unruly horse to assist in breaking him in.

CAVETTO, n. *kă-vĕt'tŏ* [It.—from *cavo*, hollow]: in *arch.*, a hollow molding used principally in cornices.

CAVIANA, *kâ-ve-â'nâ:* island of Brazil, at the mouth of the Amazon, under the equator. It is triangular in shape, 35 m. long and 20 m. wide, level, fertile, and stocked with cattle. On the s.e. side is a small town, Roberdello.

CAVIARE, n. *kăv-ĭ-âr* [F. *caviar;* OF. *cavial*, caviare—from It. *caviale;* and *caviaro;* Turkish *havyár;* mod. Gr. *kabĭări*]: a prepared article of food consisting of the salted roes of several kinds of large fish, chiefly of the common sturgeon, *Accipenser Sturio* (see STURGEON); something that cannot be appreciated or understood by the people, from the fact of the disagreeable flavor of *caviare* to an unaccustomed palate. Caviare is prepared chiefly in Russia, where it is greatly esteemed as food. It is used also in Italy and France. The species of sturgeon from the roe of which chiefly it is prepared, inhabit the Caspian and Black seas and their tributary rivers. Among them are the bielaga, or great sturgeon (*Accipenser Huso*), the osseter (*A. Guldenstadtii*), the scherg or sevruga (*A. stellatus*), and the sterlet (*A. Ruthenus*). The caviare made from the roe of the last-named species is esteemed particularly delicious, and is reserved for the Russian court. Astrakhan is a principal seat of the preparation of caviare. More than 400,000 lbs. of caviare have been prepared in the Caspian fishery in a single year. CAVIARE TO THE GENERAL (the taste for *caviare* being not natural but acquired), anything which is beyond the taste and appreciation of the people.

CAVICORNIA, n. plu. *kăv'ĭ-kŏr'nĭ-ă*, or CAV'ICORNS, n. plu. *-kawrnz* [L. *căvus*, hollow; *cornu*, a horn]: the hollow-horned ruminants, in which the horn consists of a cen-

tral bony core, surrounded by a horny sheath, as in the ox, sheep, or antelopes.

CAVIL, v. *kăv′ĭl* [L. *cavillor*, I taunt—from *căvus*, hollow; OF. *caviller*, to wrangle]: to raise frivolous objections; to find fault unreasonably; to wrangle; to carp at: N. a false or frivolous objection.

CAVITÉ: a small seaport of Luzon, Philippine Islands; about 11 miles s.w. of Manila, and fronting directly on the bay; pop. (1899) 9,484. The history of Cavité commences almost simultaneously with the first occupation of the Philippines by the Spaniards who fortified it strongly. These works subsequently were allowed to fall into decay, and the town became a place of minor importance. Prior to the great battle in Manila bay, Admiral Dewey boldly steamed past Cavité, which was supposed to be strongly fortified. Immediately after the defeat of the Spanish, the Americans occupied the town, and on the arrival of troops its works were strengthened, and it was made a naval and military base. The town gives its name to a province. Pop. 134,500. The latter was created under the 'provincial government act,' 1901, Feb. 6.

CAVO-RELIEVO, n. *kâv′ō-rĕ-lēv′ō* [It., hollow-relief]: figures carved or indented into a surface, instead of being raised upon it; intaglio. In this peculiar kind of relievo, which was extensively employed by Egyptian artists, the highest surface of the object represented is only on a level with the plane of the original stone, the rounded sides being cut into it. The effect resembles that of a concave seal. It is correctly described as *intaglio rilievato*. A wood-cut is given in Fairholt's *Dictionary of Terms in Art* of the Egyptian king Amunoph III. in hieroglyphics.

CAVORT, v. *că-vōrt′* [U. S.]: to prance about like a horse.

CAVOUR, *ka-vôr′*, Camilla Benso di, Count: descendant of a noble and wealthy family of Piedmont; 1810, Aug. 10–1861, June; b. Turin; Italian statesman. He was educated for a military career, but his liberal tendencies being likely to prove an insuperable barrier to his promotion, he retired during the stirring events of 1830–31, and engaged in agriculture, in which he introduced great improvements. He was the first to use guano in Piedmont; and, at his instigation, a national agricultural society was formed. During a residence in England he made himself intimately acquainted with the political organization of the country, and with its industrial institutions. He returned to Italy, 1842, and in conjunction with Count Cesare Balbo, he in 1847 established a political daily journal, in which he advocated the interests of the middle classes—a representative system, somewhat after the pattern of the English constitution, as opposed alike to absolutism on the one hand and mob rule on the other. On his suggestion the king was petitioned for a constitution, which was granted, 1848,

Feb. As a member of the chamber of deputies during the stormy period which succeeded Charles Albert's declaration of war against Austria in March, Cavour strenuously opposed the ultra-democrats, and counselled an alliance with England as the surest guarantee for the success of the Italian arms. In the Marquis d' Azeglio's ministry, formed soon after the fatal battle of Novara, Cavour was successively minister of agriculture and commerce, minister of marine, and minister of finance; and in 1852 he was appointed to succeed d'Azeglio as premier. From this time until his resignation in 1859, in consequence of the conclusion of the peace of Villafranca, Cavour was the originator as well as the director of the Sardinian policy. Taking upon himself at different times, in addition to the premiership, the duties of the ministers of finance, commerce, and agriculture, and latterly of home and foreign affairs, he greatly improved the financial condition of the country, introduced free-trade, consolidated constitutionalism, weakened clerical influence, and made Sardinia a power of some account in Europe, by bringing her into alliance with England and France against Russia. The dispatches which Cavour penned in reply to those of Austria, prior to the outbreak of the Italian war, are on all hands acknowledged as master-pieces of astute diplomacy. In 1860, Jan., Cavour was again called to preside over the Sardinian government, the duties of foreign minister likewise devolving upon him, and temporarily those of the minister of the interior also. He continued to direct the Sardinian policy until his death. Count Cavour's name will live in history as the pure-hearted, broad-minded, and sagacious leader on the field of statesmanship and diplomacy for the reviving and reunited Italy.

CAVY, n. *kā′vĭ* [new L. *cavĭă*—from Brazilian *cabiaï*]: *Cavia;* genus of quadrupeds of the order *Rodentia*, regarded as the type of a family, *Cavidæ*, differing from the Hare family (*Leporidæ*) in the complete want of clavicles, in the want of growing roots to the molar teeth, and in having the incisors situated as in other quadrupeds generally, and not in the peculiar manner characteristic of the hares. There are four molar teeth in each jaw, and in the genus cavy these are compound; and the genus is further characterized by four toes on each of the fore-feet, and three on each of the hind-feet, by the feet not being webbed, by the females having only two teats, and by the want of a tail. One species, *Cavia Cobaya*, has long been well known as a domesticated animal, and has been a common pet and plaything of children in Europe, almost from the time of the discovery of America. It is called sometimes the Common Cavy or Restless Cavy, but much more frequently the Guinea-pig, though it is neither nearly related to pigs nor a native of Guinea. Perhaps *Guinea*, in this name, may be a corruption of *Guiana*, the cavies, and indeed the whole family of the *Cavidæ*, being exclusively S. American.

The colors which the domesticated cavy exhibits have never been seen in any of the wild cavies of S. America; and as it is known to have exhibited the same variations of color from about the time of its introduction into Europe, it is supposed to have been long domesticated by some S. American tribes. The Guinea-pig multiplies with a rapidity exceeding that of any other known quadruped, producing young ones when only two months old, and afterward at intervals of two months, and from four to twelve in a litter. This extraordinary fecundity is probably not so much the result of domestication as a provision for the preservation of the race in a wild state, the little animal being very defenseless and destitute of means of escape, the ready prey of every carnivorous beast and bird.—The other species of cavy much resemble the Guinea-pig. Some of them are very numerous in some parts of S. America, and are sought for food, although no such use is made of the domesticated cavy. The agouti (q.v.) and the capybara (q.v.) are ranked among the *Cavidæ*.

CAW, v. *kaw* [from the sound: Dut. *kaa;* Sw. *kaja*, a jackdaw]: to cry like a crow or rook. Caw'ing, imp. Cawed, pp. *kawd*.

CAWASS, properly Khawass, n. *kow-ăs'* [Ar.]: in the *East*, an attendant; a messenger; a domestic; a grandee; a minister of state: another spelling is Cavass n. *kă-văs'*, in *Turkey*, a police officer.

CAWEIN, *kaw'ĕn*, Madison Julius, American poet: b. Louisville, Ky., 1865, March 23. His verse is often exceedingly musical and displays great command of metres. Its defects are over ornamentation, and a too profuse employment of adjectives, but the note which he strikes is distinctive and pleasing. His works include: *Blooms of the Berry* (1887); *The Triumph of Music* (1888); *Accolon of Gaul* (1889); *Lyrics and Idyls* (1890); *Days and Dreams* (1891); *Moods and Memories* (1892); *Intimations of the Beautiful* (1894); *Poems of Nature and Love* (1893); *Red Leaves and Roses* (1893); *Undertones* (1895); *The Garden of Dreams* (1896); *Shapes and Shadows* (1898); *Idyllic Monologues* (1898); *Myth and Romance* (1899); *One Day and Another* (1901); *Weeds by the Wall* (1902); *The Vale of Temple*, poems (1905); etc.

CAWK, n. *kawk* [prov. Eng. *cauk:* comp. *calc*, in calc-sinter]: familiar term for a massive variety of heavy spar or native sulphate of baryta (see Baryta). Cawk'y, a. *-ĭ*, like cawk or pertaining to it.

CAWNPORE: district of the city of Cawnpore, in the lieut.-governorship of the N. W. Provinces. Occupying the entire breadth of the Doab, it touches at once the Jumna and the Ganges; while to the e. it has Futtehpore, and to the w. Etawah and Furruckabad. It is an alluvial plain of great fertility. The vine is cultivated and indigo grows wild. Besides its two mighty rivers and their navigable tributaries, the Ganges canal traverses the country for about 60 m. Pop. 1,200,000.

CAWNPORE, *kawn-pōr'*, or KHANPUR: city of the Doab, on the right bank of the Ganges, about 140 m. above Allahabad, at the junction of the Jumna, being separated by the river from Oude, whose cap., Lucknow, lies 53 m. n.e. Cawnpore is in lat. 26° 29′ n., long. 80° 25′ e. The stream in front, varying, according to the season, from 500 yards in width to more than a mile, presents a large and motley assemblage of steam-vessels and native craft. Cawnpore, at least as a place of note, is recent, being indebted for its growth, besides its commercial facilities, partly to military and political considerations. In 1777, being then an appendage of Oude, it was assigned by the nawab as the station of a subsidiary force; and in 1801 it became, in name as well as in fact, British property. Its cantonments, having accommodation for 7,000 troops, have gradually accumulated about 50,000 native inhabitants, while the city itself contains a somewhat larger population of similar origin. During the mutiny of 1857 Cawnpore was the scene of Nana Sahib's massacre of his English captives. Though Cawnpore is only 379 ft. above the sea, yet, during the winter, considerable quantities of ice are made for preservation, through the exposing of water by night in shallow vessels. Pop. 197,170.

CAXAMARCA, or CAJAMARCA, *ka-čhâ-mâr'ka:* city of Peru, cap. of prov. of Caxamarca, dept. of Truxillo; on the e. side of the western Andes, in a fertile valley on the Erizneja, 72 m. n.n.e. of Truxillo, abt. 9,060 ft. above the sea. Its streets are wide and regular, but the houses are built of clay. It has a fine parish church, supplied by Charles II. of Spain, a church of San Antonio, a Franciscan monastery, a nunnery, and the remains of the palace of Atahualpa, the last Inca put to death here by the Spaniards 1533. The Inca's baths, or sulphur springs of Pultamarca, e. of the town, have a temperature of 156° F., and are much used. Caxamarca has manufactures of woolen and linen cloth, steel, silver, and biscuits; a good trade with Truxillo, and a railroad to the port of Pacasmayo. Pop. abt. 12,000.

CAXTON, *kăks'ton*, WILLIAM: abt. 1422—abt. 1491; b. in the Weald of Kent. He introduced printing into England. The particulars of the life of this great benefactor of his country are scanty. He was apprenticed 1439 to Robert Large, a wealthy London mercer. At the death of the latter, 1441, he went to Bruges, where 1462 or '03 he seems to have become gov. of a chartered association of English adventurers trading to foreign parts. In 1471 Caxton entered the service of Margaret, Duchess of Burgundy, formerly an English princess; and apparently toward the end of 1476 he set up his wooden printing-press at the sign of the red pale in the almonry at Westminster. The art of printing he had acquired during his sojourn in Bruges, doubtless from Colard Mansion, a well-known printer of that city; and in 1474 he put through the press

the first book printed in the English tongue, the *Recuyell of the Historyes of Troye*, a translation of Raoul le Fevre's work. The *Game and Playe of the Chesse* was another of Caxton's earliest publications; but the *Dictes and Notable Wise Sayings of the Philosophers*, published 1477, is the first book which can with certainty be maintained to have been printed in England. All the eight founts of type from which Caxton printed may be called black letter. Of the 99 known distinct productions of Caxton's press no less than 38 survive in single copies or in fragments only. Caxton, who was an accomplished linguist, and translated many of the works that issued from his press, was diligent in his craft or in translation till within a few hours of his death, which seems to have been about the close of 1491. In 1877 the printer and his work were fittingly commemorated by a typographical exhibition in London. See *The Old Printer and the New Press*, by Charles Knight (1854); *Life and Typography of William Caxton* (1861–63) by W. Blades; and the *Biography and Typography of Caxton* (1877), by the same author.

CAY, n. *kā* [Span. *cayo*, a shoal]: a reef or tiny island in the Gulf of Mexico.

CAYAMBE, *kī-âm′bā*, or CAYAMBE-URCU, *kī-âm-bā-ôr-kô′:* a peak of the Andes, in Ecuador, under the equator, 45 m. n.e. of Quito. Its snow-crowned head, 19,541 ft. high, and fine conical form make it one of the landmarks of the globe.

CAYCOS, or CAYOS, or THE KEYS: see CAICOS.

CAYENNE, n. *kā-yĕn′* or *kā-ĕn′:* a very strong pungent pepper of a red color that comes from *Cayenne*, S. America; the dried powdered pods and seeds of different species and varieties of *Capsĭcum*, ord. *Solanācĕæ:* ADJ. pertaining to: see CAPSICUM.

CAYENNE, *kā-ĕn′* or *kī-ĕn′:* fortified seaport, cap. of French Guiana, on the w. point of an island of Cayenne at the mouth of the river Oyak. The roadstead is excellent, and the port commodious but shallow. Cayenne, though it is the entrepôt of all the trades of the colony, is known chiefly as a great French penal settlement. The island, 32 m. in circumference, is separated from the mainland by a narrow channel; its soil is fertile, but the climate is extremely unwholesome for Europeans, large numbers of the convicts having died by various malignant fevers. Cayenne became a French colony about 1635; deportation hither began during the first French revolution. Pop. abt. 8,000.

CAYENNE′ CHER′RY: see EUGENIA.

CAYMAN, or CAIMAN, n. *kā′măn* [negro name]: the American alligator. The name Cayman is variously used, either as the distinctive appellation of some, or as a common name for all the *Crocodilidæ* of S. America: see ALLIGATOR. The genus *Alligator* is by some naturalists of the present day divided into three genera, to one of which

the name Cayman (*Caiman*) is appropriated, and of which the type is the species called the Eyebrowed Cayman (*Alligator palpebrosus*), to which the name Cayman is distinctively applied in Surinam and Guiana, a species very abundant there, but not one of the largest or more dangerous of its tribe. It is remarkable for the three bony plates, separated by sutures only, which form each eyebrow or eyelid, projecting as large knobs, like a man's fist; and this, and the scarcely webbed-feet, constitute the most important characters of the genus or sub-genus Cayman. To this sub-genus belong also *A. trigonatus*, regarded by Cuvier as a mere variety of the same species, and *A. gibbiceps*.

CAYMANS, *kī-măn'*, in English *Alligators:* three low islets of the Caribbean Sea, which form a dependency of Jamaica, being 130 m. n.w. of it. Discovered by Columbus, they were by him called Tortugas, from the abundance of turtle—still the staple production of the group. Area abt. 2,000 acres. The soil yields corn and vegetables; and the people rear hogs and poultry. Pop. 1,600.

CAYNOTE: the same as CAYOTE.

CAYUGA LAKE, *kā-yô'ga:* boundary between Cayuga and Seneca counties, N. Y., and extending s. into Tompkins co.; 38 m. long., 1 to 3½ m. wide. It is navigable throughout and seldom frozen over, except at the n. end, which is rather shallow; elsewhere it is believed to attain a depth of 500 ft. or more. Its surface is 377 ft. above the sea, and 146 ft. above Lake Ontario, into which its waters flow through the Seneca and Oswego rivers. Its banks are formed of Silurian and Devonian rocks. Steamers ply from Ithaca at its head to Cayuga bridge at its foot.

CAYU'GAS: a tribe of the Iroquois or Six Nations. They called themselves Gwengwen or Goiogwen, and occupied villages on Cayuga Lake, N. Y. They numbered some 300 warriors when first known to the French, who in vain attempted to conciliate them, and conducted missions among them, 1656–84, with little result. One of their chiefs, however, Saonchiogwa, was converted 1671, and another, Tawerahet, was taken to France and became friendly. The tribe took arms against the Americans at Point Pleasant 1774, and during the revolution fought for the British; their villages were destroyed for harassing Gen. Clinton, 1779, on his march to join Sullivan. After the war they ceded to N.Y. all their land except a small reservation, which they gave up in 1800, and scattered among other tribes. Their language is now nearly extinct, and their numbers reduced to about 250, some of whom are at the Seneca reservation in Erie co., 20 m. s. of Buffalo.

CAZALLA DE LA SIERRA, *kâ-thâl'yâ dā lâ sē-ĕr'râ:* town of Spain, province of Seville, 39 m. n.e. of the city of Seville. It is on a declivity of the Sierra Morena; the district around is mountainous and well wooded, and abounds

in minerals of various kinds, including iron, silver, copper, sulphur, and marble. The inhabitants, numbering between 7,000 and 8,000, are chiefly employed in smelting metals, manufacturing cannon, machinery, and agricultural implements. Tanning, weaving, etc., are done. Pop. 8,000.

CAZEMBÉ, or KAZEMBÉ, *kâ-zēm'bė:* official and hereditary name of an African chief; thence used to designate his people and territory, between 11° and 9° s. lat., s. of lake Moero and n. of Bangweolo. His authority, which 90 years ago prevailed far and wide, has shrunk till it covers an estimated area of but 120,000 sq. m. and a pop. of 500,000. The native race, the Messiras, has been conquered and kept down by the Campolólas, who alone are eligible to office; theirs is the court language. The Cazembé is an absolute monarch, with 600 wives. The polygamy of his subjects is limited only by their means. The country is a well-watered plain. The chief river, the Luapula, flows from Bangweolo to Moero, and was supposed by Cameron to be one of the head waters of the Congo. Millet, maize, manioc, sugar-cane, yams, gourds, and bananas, are cultivated; the horse and ass are unknown and sheep scarce, but cattle common. Salt is found in several places; coarse cotton-cloth, earthenware, and iron are manufactured; and ivory, copper, and slaves, exported. Cazembé was visited 1796 by Pereira, 1798 by Lacorda, and 1802 by Baptista and Jose, agents of Da Costa. A Portuguese official sent an embassy under Monteiro, 1831. Livingstone was there 1868, and found the capital, which changes on the accession of each new ruler, at Usemba or Lunda, near Lake Mofwe.

CAZENOVIA, *kăs-ēn-ō'vĭ-a:* village of Madison co., N. Y., on the small lake of Cazenovia, 18 m. s.e. of Syracuse, with which it is connected by the Syracuse and Chenango Valley railroad; it is connected also with the N. Y. Central railroad, 15 m. n., by the Cazenovia and Canastota railroad. It has several mills, a bank, and a newspaper, and is the seat of a seminary supported by the Central N. Y. Meth. Epis. Conference. Pop. 2,000.

CAZIQUE, n. *kă-zēk'* [native or Amer. name]: a W. I. or Amer. chief; also spelled CACIQUE and CAZIC.

CAZONS, n. plu. *kā'zŏnz,* or CASINGS, n. plu. *kā'zĭngz* [F. *gazon,* turf, sod: OF. *wason*—from O.H.G. *waso*]: in *OE.,* dried cow-dung in masses used as fuel; oblong pieces of dried turf or peat used as fuel.

CAZORLA, *kâ-thōr'lâ:* town of Andalusia, Spain, 40 m. e.n.e. of Jaen. Cazorla, which is a place of considerable antiquity, is pleasantly situated on a declivity, and is well-watered by the Vega; has two old castles—one an Arab structure—manufactures of leather, earthenware, soap, and bricks, and a trade in agricultural produce. Pop. 7,500.

CAZWINI, *kâz-wē′nē*, Zacharia Ben Mohammed, Arabian naturalist: b. Cazwin, Persia, 1212, d. 1283, Aug. 7. He was descended from a family of lawyers, who derived their origin from Anas Ben Malek, a companion of Mohammed, and had settled in Cazwin, a city in Persia. From that place this author received the surname under which he has become celebrated. Of the circumstances of his life we know little more than that he was cadi of Wazith and Hillah, and died in the year of the Hegira 682 (1283 A.D.). His most important work is on natural history—*The Wonders of Nature and the Peculiarities of Creation*—of which Ideler, professor in the University of Berlin, published the chapter on the *Constellations of the Arabians*, and of which there are fragments in Bochart's *Hierozoikon*, in Ouseley's *Oriental Collections*, and in Wahl's, Jahn's, and De Sacy's *Arabic Chrestomathies*. It was the object of Cazwini, like Pliny, to describe the wonders of all nature. His work contains a comprehensive view of all that had been written before him, but in so grand and original a manner that it is of higher value than most of the original works which treat of the same subjects. There is an abridged translation of it in the Persian.

CEANO′THUS: see Red Root.

CEARA, *sā-â-râ′:* province of Brazil, on the n. coast, lat. 2′ 40′—7° 25′ s., long. 37° 40′—41° 30′ w.; 40,253 sq. m. It abounds in balsams, gums, resins, and fruits; and among its minerals are gold, iron, copper, and salt. The *port* of Ceara had a trade with Great Britain in 1874 amounting to £969,584. Pop. of Ceara 881,000.

CEASE, v. *sēs* [F. *cesser*, to cease—from L. *cessārĕ*, to delay, to cease; It. *cessare*, to dismiss]: to leave off, followed by 'from'; to stop; to fail; to be at an end. Ceas′ing, imp. Ceased, pp. *sēst*. Cease′less, a. without a stop or pause; incessant; endless. Cease′lessly, ad. *-lĭ*. Cessation, n. *sĕs-sā′shŭn*, a stop; a pause; a leaving off. Cease and determine, in *law*, said of an estate or right granted during a certain period, when such comes to an end.

CEBADIL′LA: see Sabadilla.

CEBES, *sē′bēz:* Greek philosopher, of Thebes in Bœotia; a disciple of Socrates. Plato introduced him in the *Phædo*, and Xenophon called him eminent for virtue and love of truth. He is remembered by the *Pinax* (picture) or *Tabula Cebetis*, a didactic dialogue professing to explain an allegorical picture. It starts with the Platonic doctrine of a pre-existent state, wherein men had been taught how to live on earth, but a draught of oblivion, taken in different degrees, obscures or erases the lesson; they are tempted, but may overcome by fortitude and patience. The sciences, grammar, geography, arithmetic, geometry, and music, are not the true discipline, but useful as restraints to youth. Some

from passages probably interpolated, have credited this work to another Cebes, a stoic of 500 or 600 years later. The *Table* has been translated into most languages, and is often printed with Epictetus's *Enchiridion*. Salmasius published the text with Latin and Arabic versions 1640. Laertius and Suidas credit Cebes with two other dialogues now lost. *Hebdome* (the Seventh) and *Phrynichus*.

CEBU, or ZEBU (island): see PHILIPPINE ISLANDS.

CEBUS, *sē'bus* [Gr., an ape or monkey]: genus of American monkeys, characterized by a round head and short muzzle, a facial angle of about 60°, long thumbs, and a long prehensile tail entirely covered with hair. The species are numerous, all of very lively disposition and gregarious habits, living in trees. They feed chiefly on fruits, but also on insects, worms, and mollusks. They are included under the popular designation SAPAJOU in its wider sense, and some of them are the monkeys to which this name is sometimes more strictly appropriated. The names SAJOU and SAI are also given to some of them, and some are called Capuchin (q.v.) monkeys. One of the most common species in Guiana is the WEEPER MONKEY, or WEEPER SAPAJOU (*C. Apella*).—The name Capuchin is perhaps most frequently given to *C. Capuchinus*, a brownish species, with head, feet, and hands generally black, and front, shoulders, and cheeks whitish.—Some of the species of cebus are adorned with beards. The name *Cebidæ* is sometimes given to the American monkeys collectively, as a family or tribe. See MONKEY.

CECIDOMYIA, *sē-sĭ-dō-mī'ya* [Gr. *kekidion*, a gall-nut; and *myia*, a fly or gnat]: genus of dipterous (two-winged) insects of the family *Tipulariæ*—the gnat and mosquito family; having downy wings, which have three nervures, and are horizontal when at rest; antennæ as long as the body, with bead-like joints, and whirls of hairs at the joints; long legs, and the first joint of the tarsi very short. The species are numerous. All are of small size, but some of them are very important on account of the ravages which their maggots effect in grain-crops. *C. cerealis*, sometimes called the barley midge, a brownish-red fly with silvery wings, of which the maggot is vermilion-colored, is often very destructive to crops of barley and spelt in Germany. The little maggots live in families between the stalk and the sheath of the leaf, abstracting the juice of the plant.—The Wheatfly (q.v.) and the Hessian Fly (q.v.) belong to this genus.

CECIL, *sĕs'il* or *sĭs'il*, RICHARD: 1748, Nov. 8—1810, Aug. 15; b. London. He was intended for trade but entered Queen's College, Oxford, 1773, was ordained 1776-77, ministered at Lewes, Sussex, at St. John's, Bedford Row, and elsewhere in London, from 1780, and held the livings of Cobham and Bisley, Surrey, from 1810. Cecil was a zealous and eminent preacher, and a leading light of the evangelical party in the English Church. He published Lives of W. B. Cadogan, 1798, of John Bacon 1801, and of John

Newton 1808; these, with his sermons, remains, etc., were collected as his *Works* (4 vols. 1811), with a memoir by Josiah Pratt (reprinted 2 vols. 1838). His *Selection of Psalms and Hymns* (1785), though without marked character, went through some 40 editions. Cecil had some talent, or taste, for music, poetry, and painting. He died at Tunbridge Wells.

CECIL, Robert, Earl of Salisbury: abt 1550-1612, May 24; son of William Cecil, Lord Burleigh. On the death of his father, having previously held important state offices, he succeeded to what would now be called the premiership. On the accession of James I., Cecil, who had carried on a private correspondence with that monarch before Elizabeth's death, was confirmed in his office, and received many high honors, culminating in that of Earl of Salisbury. In 1608, he was made lord high treasurer, and the exchequer was greatly improved in his hands. Cecil was a man of immense energy and far-reaching sagacity, undoubtedly the best minister the country had in his time; but he was cold, selfish, and unscrupulous as to the means he took to gain his ends and rid himself of his rivals. His connection with the disgrace of Essex and Raleigh, especially the latter, laid him open to great and deserved odium, in the latter case especially. Like his father, however, he was free from the meanness and dishonesty of enriching himself out of the public money.

CECIL, William, Lord Burleigh: one of England's greatest statesmen: 1520, Sep. 15—1598, Aug. 15; b. Bourne, Lincolnshire. Educated at the grammar schools of Grantham and Stamford, he thence passed to St. John's College, Cambridge, where he was remarkable alike for diligence and for aptitude in learning. Entering Gray's Inn at the age of 21, he applied himself assiduously to the study of law. History, genealogy, and theology also formed part of his studies at this time; and his knowledge of the last recommended him to the notice of Henry VIII., who presented him with the reversion of the *custos brevium*, an office of value in the common pleas. An alliance with the daughter of Sir Anthony Cook procured him the friendship of the protector Somerset, who, 1547, appointed him master of requests; and in the following year his great abilities procured for him the office of sec. of state. He shared in the disgrace of Somerset, even to imprisonment for three months; but in less than two years after his release, his pre-eminent capacity and fitness secured for him a reappointment to the state secretaryship by the Duke of Northumberland, his former patron's sworn enemy. During his second secretaryship Cecil effected most important and beneficial changes in the commercial policy of the country. With a sagacity far beyond the spirit of his age he endeavored to throw trade open, and did succeed in abolishing some monopolies; but others proved too strong for him, standing as he did alone at a time when exclusive privileges were universally considered the only sureties of a profitable trade. When Queen Mary ascended the throne-

Cecil, being a Protestant, resigned his official employment, because he could not conscientiously serve a Rom. Cath. court; but as a private gentleman he maintained good relations with the Rom. Cath. party, and was one of the few eminent Protestants who escaped in purse and person during that short but infamous reign. His freedom from persecution has given rise to the charge that he was a 'trimmer' —a wholly unjust accusation. Cecil was naturally cautious and politic, and averse to extremes in religion; but though he took no part in bitter sectarian discussions, he never belied his conscience, and to him is mainly owing the rejection of the bill which the Roman Catholics had introduced into parliament, with the view to a wholesale confiscation of the estates of Protestants. Prior to Mary's death, Cecil foreseeing her end, had entered into correspondence with Elizabeth, who, on her accession to the throne (1558, Nov. 16), at once recognizing Cecil's capacity for government, appointed him sec. of state. A biography of Cecil from this time until his death would be a 40 years' history of England, for he was alike the originator and director of that policy which, hitherto, has made Elizabeth's reign memorable above that of any other English sovereign; for although Elizabeth occasionally, in her caprice, favored other courtiers, Cecil was the statesman whose judgment she relied on in all matters of consequence. His policy at home and abroad, though shrewd and cautious, was also liberal and comprehensive, while he displayed a power of decision, ready and stern, when necessity demanded. The queen created him Baron Burleigh, 1571, and conferred on him the order of the Garter in the succeeding year, when he was also made lord high treasurer, which office he held until his death.

CECILIA, *se-sĭl′ĭ-â*, SAINT: patroness of music: said to have suffered martyrdom in 230. Her heathen parents, who are said to have belonged to a noble Roman family, betrothed their daughter, who had been converted to Christianity, to a heathen youth named Valerian. This youth and his brother Tiberius became Christian converts, and suffered martyrdom. Cecilia, when commanded to sacrifice to idols, firmly refused, and was condemned to death. Her persecutors, it is said, first threw her into a boiling bath, but on the following day they found her unhurt. The executioner next attempted to cut off her head, but found it impossible; however, three days later she died. As early as the 5th c. there is mention of a church dedicated to her at Rome, and in 821, by order of pope Paschal, her bones were deposited there. St. Cecilia is regarded as the inventor of the organ, and in the Rom. Cath. Church her festival day, Nov. 22, is celebrated with splendid music. Chaucer, Dryden, and Pope have celebrated St. Cecilia and the painters Raphael, Domenichino, Dolce, and others have represented her in fine pictures.

CECITY, n. *sē′sĭ-tĭ* [F. *cécité*—from L. *cæcĭtātem*, blindness—from L. *cæcus*, blind]: blindness.

CECOMORPHÆ, *cē-kō-môr′fē*, one of Huxley's groups of schizognathous birds, now generally ranked as a sub-order or order, or split up in various ways among several orders. The palate has a narrow cleft on each side of the vomer, running the entire length between this bone and the palatines; the nostrils are usually narrow slits, but are sometimes tubular; the feet are always webbed, with three toes directed forward and the hallux small or wanting, and never connected to the other toes by a web. The *Cecomorphæ* are all aquatic birds, and may be subdivided into the *Pygopodes* or divers, and the *Longipennes* or long-winged swimmers. The former includes the following important families: *Alcidæ*, the auks, puffins, and guillemots; *Podicipedidæ*, the grebes; *Heliornithidæ*, the sun-birds; and *Colymbidæ*, the divers. The *Longipennes* group includes two families, the *Procellariidæ* or petrels, albatrosses, and shearwaters; and the *Laridæ*, or gulls, terns, and skimmers.

CECROPIA, *se-krō′pĭ-a:* genus of trees of the nat. ord. *Artocarpaceæ*. *Cecropia peltata*, native of the W. Indies and of S. America, sometimes called trumpet-wood and snake-wood, is remarkable for its hollow stem and branches exhibiting merely membranous partitions at the nodes. The small branches, these partitions being removed, are made into wind-instruments. The wood is very light, readily takes fire by friction against a harder piece of wood, and is much used by the Indians for procuring fire in this way. The fruit is agreeable and resembles a raspberry. Both the trunk and branches yield a large quantity of saline matter, employed by the French planters in the purification of sugar. The bark is strong and fibrous, and is used for cordage. It is also astringent, and is applied in diarrhea and other diseases.

CECROPIA *sē-krō′pĭ-a* (*Platysamia Cecropia*): lepidopterous insect of the family *Bombycidæ;* the largest moth known in America, and nearly related to the silk worm. It appears in June, is of a dusky gray color, varied with white and black; and sometimes measures 6½ in. across. Its larva is over 3 in. long, with red and yellow warts bearing bristles. The cocoon is of strong and abundant silk which cannot be reeled, but has been corded and spun; it would be an important article of commerce but for the delicate character of the larvæ, which are not easily raised. Those of the *Telea polyphemus* are more hardy. An allied species is the ailanthus silkworm of China.

CE′CROPS, first king of Attica; in Greek mythology, an autochthon (q.v.), half-man and half-dragon. Belonging to the prehistoric ages of Greece, his real character can only be guessed at. Tradition declared him to be the founder of marriage, the author of the political division of Attica into twelve states, and the introducer of agriculture, of navigation, and commerce. He is said also to have civilized the religious rites of the people. The name Cecrops is given to various towns in Greece, and the legends

in general indicate a Pelasgic origin for the hero. The latter accounts, that he came from Sais in Egypt, have no historic basis.

CECUTIENCY, *sē kū'shen-sĭ* [L. *cæcutiens*, p. pr. of *cæcutio*, I am blind, *cæcus*, blind]: a partial blindness: tendency to blindness.

CEDAR, n. *sē'dėr* [F. *cėdre*—from L. *cĕdrus;* Gr. *kĕdros*]: a large evergreen tree; the common name of various trees, but especially the *Cĕdrus Lĭbănī*, cedar of Lebanon, ord. *Conĭfĕræ*. Ce'dared, a. *-dėrd*. Cedar-like, a. Ce'drine, a. *-drĭn*, pertaining to the cedar. Cedar-bird, a common N. Amer. bird like the Bohemian waxwing, so named from frequenting cedar-trees: see Waxwing.

CEDAR, *sē'der*, or Cedar of Leb'anon: tree celebrated from the most ancient times for its beauty, magnificence, and longevity, as well as for the excellence and durability of its timber. It is often mentioned in Scripture; it supplied the wood-work of Solomon's temple; and in the poetry of the Old Testament it is a frequent emblem of prosperity, strength, and stability. It belongs to the nat. ord. *Coniferæ*, and is the *Pinus cedrus* of the older botanists, but is now ranked in the genus *Abies* (see Fir), in the genus *Larix* (see Larch) by those who make *Larix* a distinct genus from *Abies*, or is made the type of a genus, *Cedrus*, distinguished from *Larix* by evergreen leaves and carpels separating from the axis, and receives the name of *Cedar Libani*.

Of the celebrated Cedars of Lebanon, only a few remain. They consist of a grove of some 400 trees, about three-quarters of a mile in circumference, partly old trees, partly young ones. Learned travellers think that most of the trees in the grove may be 200 years old, and several between the ages of 400 and 800 years. There are 12 trees whose age is incalculable—seven standing very near each other; three more a little further on, nearly in a line with them; and two, not observed by any recent traveller except Lord Lindsey, on the n. edge of the grove. The largest of these two is 63 ft. in circumference—following the sinuosities of the bark; one of the others measures 49 ft.

These trees are more remarkable for girth than stature, their height hardly exceeding 50 ft. Their age is variously estimated; the rules by which botanists determine the age of trees are not applicable to them, for their stems have ceased to grow in regular concentric rings; they owe their prolonged existence to the superior vitality of a portion of their bark, which has survived the decay of the rest. Russeger is inclined to admit that these trees may possibly number some 2,000 years.

The Arabs, of all creeds, have a traditional veneration for these trees; they believe that an evil fate would surely overtake any one who should dare to lay sacrilegious hands on the *saints* as they fondly call them. Every year, at the feast of the transfiguration, the Maronites, Greeks,

and Armenians mount to the cedars, and celebrate mass on a homely altar of stone at their feet.

The cedar has been planted in parks in many parts of Europe, it was introduced into England in the latter part of the 17th c., and a tree at Sion House, London, is now eight ft. in diameter at three ft. above the ground. Even in Inverness-shire it thrives so well that trees at Beaufort castle, the seat of Lord Lovat, planted 1783, are now three or four ft. in diameter. On its native mountains the cedar is found at the base of the highest peaks, at an altitude of about 8,000 ft. above the sea. It seems to delight in a dry, open soil, where, however, its roots can have access to abundance of water. Although in foliage and some other particulars the cedar considerably resembles the common larch, it differs in form and habit very widely both from the larch and from the pines in general. Its stem bears almost down to the ground irregularly-placed branches, often of prodigious size and expanse, which divide irregularly into branchlets. The leaves are dark green, 10–15 lines long, pointed, united in clusters of 20–30; on the young shoots they are very numerous, and not in clusters; the small branchlets also are crowded together and pensile. The cones are erect, oval, broadly rounded at both ends, about four inches long, and three inches in diameter; their scales closely crowded, large, and broad. The cones take two years to come to maturity, and hang on the tree for years before their scales come off and their seeds are set free. The wood of the trunk is reddish. and full of a fragrant resin. The ancients kept their writings in cabinets or boxes of cedar-wood. Extraordinary indestructibility and other virtues were ascribed to it. It is not nearly so much prized at the present day, because it is soft and light, and apt to crack in drying. This inferiority is, however, not improbably owing to the inferior age of the trees from which the timber is now procured. A resinous substance, called *Cedar Resin*, or *Cedria*, flows spontaneously from the trunk of the cedar, or from incisions; it resembles mastic, and was anciently used with other resins in the embalming of the dead. It was also used as a medicine. In very ancient times, cedar oil, a kind of turpentine, was prepared from the wood and was spread on books for their better preservation. At the present day the oil and the resin are scarcely known. What is now known as cedar oil is obtained from the juniper. The branches of the cedar, like those of the larch in warm countries, exude a sweet substance, known by the name of CEDAR MANNA.—The DEODAR, or HIMALAYAN CEDAR (*Cedrus Deodara*), a tree held in great veneration by the Hindus, and of which the name is said to be properly *Devadara*, and to signify *god-tree*, is common in the Himalaya Mountains, at elevations of 7,000–12,000 ft., forming magnificent forests, and attaining a great size, a height sometimes of 150 ft., with a trunk of 30 ft. or more in circumference, an ample head, and spreading branches. It is described as having cones somewhat larger than those

of the cedar of Lebanon, the scales of the cones falling off as soon as the seed is ripe, and as differing from the cedar of Lebanon also in more pensile branches and longer leaves; but Dr. Hooker expresses a strong opinion that they will prove to be really the same species, as well as the cedar of Algiers (*Cedar Atlantica* or *Africana*), found in the mountainous regions of the n. of Africa. The wood of the deodar is resinous, fragrant, compact, and very durable. It is susceptible of a high polish, and in its polished state has been compared to brown agate. Owing to the abundance of resin, laths of it burn like candles. Its turpentine is very fluid, and, although coarse, is much used in India for medical purposes; and tar and pitch are obtained from the trunk. The deodar has now become common as an ornamental tree in Britain, although few specimens have yet attained great size. On account of its extreme gracefulness when young, it is often planted in situations to which large trees are unsuitable.—The name cedar is often given to other coniferous trees besides the true cedars. Thus, the Siberian Stone Pine, or Cembra Pine, is called the Siberian Cedar (see Pine), and a species of fir (*Abies religoisa*) is the Red Cedar of California (see Fir). A species of cypress (q.v.) is known as White Cedar, and another as the Cedar of Goa. Several of the trees which bear the name cedar are species of juniper (q.v.), among which are the Virginian Cedar or Red Cedar of N. America, and the Bermuda Cedar—which yield the cedar-wood used for pencils. There are no true cedars in the U.S., all so called are junipers, the Spanish Cedar of the south of Europe, etc. The name cedar is given even to trees which have no resemblance to the true cedars, except in the resinous quality of the wood; thus the cedar-wood of Guiana is produced by *Icica altissima*, a tree of the nat. ord. *Amyridaceæ* (q.v.); the cedar of the W. Indies (see Cedar, Barbadoes) belongs to the nat. ord. *Cedrelaceæ;* and the name Bastard Cedar is given in India to a tree of the nat. ord. *Byttneriaceæ* (q.v.).

CEDAR, Barbadoes (*Cedrela odorata*): tree of the nat. ord. *Cedrelaceæ* (q.v.), and of the same genus with the toon of India, native of the W. Indies and warm parts of America. It is simply called cedar in the W. Indies. It is often upward of 80 ft. high, with a trunk remarkable for thickness. It has panicles of flowers resembling those of the hyacinth. The fruit, bark, and leaves have the smell of asafetida, but the wood has agreeable fragrance. Being soft and light, it is used for canoes, and for shingles. Havana cigar-boxes are generally made of it. In France, it is used in making black-lead-pencils.

CEDAR-APPLES: fungous outgrowths upon juniper and red cedar trees. They are caused by the parasitic fungus *Gymnosporangium macropus*. At first they appear like warts upon the smaller branches and twigs, becoming chocolate color or brown as autumn advances, and remaining attached and unchanged until spring, when they enlarge into horn-shaped, jelly-like masses that resemble

sponge. At this time they produce their abundant spores which, as the masses become dry, are blown away by the wind and, alighting on apple-trees, produce rust on the foliage and other green parts. They will not germinate upon cedar or juniper, but require an alternate host, the apple, to complete their life cycle. For methods of control see APPLE (*Diseases*); FUNGICIDE.

CEDAR-BIRD: the common American wax-wing (*Ampelis cedrorum*), a bird found throughout North America, breeding from the latitude of Kentucky northward. In most localities it is only partially migratory. It is a beautiful bird of delicate unobstrusive colors, generally ashy-brown with a purple tint on the head, the front of which, like the throat, is black. The tail-feathers are tipped with yellow, and the wings are crossed by a white bar, below which are the peculiar red-sealing-wax-like appendages The head is gracefully crested. The cedar-birds spend most of the time in flocks, which wander according to the supply of food, and are noteworthy for the uniformity with which all members alight or rise together. The food consists chiefly of berries when these are to be had, on which account they have received the name of cherry-birds in some sections. Nesting takes place late, when the summer is well advanced, and the rather bulky structure is usually placed in an apple or other orchard tree. The eggs are four to six in number, pale blue, and thickly speckled.

CEDAR CREEK: a stream in Shenandoah County, Virginia, flowing into the North Fork of the Shenandoah River.

CEDAR CREEK, BATTLE OF: in Civil War, 1864, Oct. 19. Gen. Early, who had retreated before Gen. Sheridan beyond Cedar Creek and to Fisher's Hill, resumed the aggressive, re-crossed Cedar Creek early in the morning, attacked and surprised Gen. H. G. Wright, who in the absence of Sheridan was in command of the Union army of 31,000 men, turned his left, drove the 8th and 19th corps from their camps, took 24 guns and many prisoners, and compelled Wright to fall back to and beyond Middletown to reform his shattered lines. Wright was ready to assume the offensive, when about 11 o'clock Sheridan rode on the field, after a swift ride from Winchester, and at 4 p. m. attacked Early, and after a hard fight routed him, retaking the lost guns, capturing 23 other guns and many prisoners. Next day Early retreated to New Market, followed by Sheridan's cavalry as far as Woodstock. The Union loss was 644 killed, 3,430 wounded, and 1,591 missing. The Confederate loss was 320 killed, 1,540 wounded, and 1,050 missing.

CEDAR FALLS: city of Black Hawk co., Iowa, on the Cedar river, at the junction of the Illinois Central and the Burlington, Cedar Rapids, and Northern railroads. Manufacturing is active in Cedar Falls, there being a large foundry, pump factory, flour, oatmeal, and paper mills. There is a State Normal School at Cedar Falls. Pop. 5,012.

CEDAR LAKE: a lake of Canada, in the Saskatchewan district, a sort of expansion of the river Saskatchewan, receiving the waters of this large stream to pour them over the Grand Rapids into Lake Winnipeg. Between Grand Rapids and Cedar Lake is another expansion, known as Cross Lake. Cedar Lake is nearly 30 miles long, and where widest 25 broad; area about 312 square miles. Its depth of water is sufficient for the largest craft, except on the northwest, where the quantity of alluvium brought down by the Saskatchewan is rapidly filling it up. Both the mainland and the islands are well wooded with balsam spruce, birch, poplar, tamarack, Banksian pine, and cedar, the last growing on the shores of the lake, particularly the northwest, and giving it its name.

CEDAR MOUNTAIN (or Slaughter's Mountain), BATTLE OF; in the Civil War, 1862, August 9. Gen. Banks commanding a Union force of about 8,000 men advancing from Culpepper C. H. on Gordonsville, met Gen. 'Stonewall' Jackson moving on Culpepper, at the crossing of Cedar Run, Culpepper Co., Va., and attacked him. Banks was defeated and driven back across Cedar Run, where, re-enforced by Gen. Pope, he checked Jackson's pursuit. Jackson held the field of battle two days, when he abandoned some of his wounded and fell back beyond the Rapidan. The Union loss was 1,759 killed and wounded, and 594 missing. The Confederate loss was 1,338 killed and wounded, and 31 missing.

CEDAR MOUNTAINS, a mountain range in Cape Colony, extending nearly along the meridian of 19° e., for about 25 miles southward, beginning with lat. 32° s., and rising at some places to a height of 5,000 feet. Cedar trees of gigantic size formerly covered these mountains, and still do so to a considerable extent. The mountains contain many Bosjesman caves.

CEDAR RAPIDS, Iowa, city in Linn County, on the Cedar River, and the Chicago & N. W., Chicago, R. I. & P., Chicago, M. & St. P., and Illinois C. R.Rs.; 219 miles west of Chicago and 310 miles north of Saint Louis. It is an important railway and manufacturing centre, and has valuable water-power. The city is built on terraced hills on both sides of the river, which is here crossed by several bridges. The streets are paved with brick and asphalt, and it has large and well-planned parks and excellent sewer, water, trolley, and gas and electric lighting systems. Cedar Rapids is the centre for a rich agricultural region and has an extensive wholesale trade. The census of 1900 returned 241 manufacturing establishments; capital, $6,256,801; persons employed, 3,441; wages, $1,600,269; value of products, $12,715,897. These figures did not include the American Cereal Co., whose mills employ 800 persons and have a daily capacity of 5,000 barrels. The Chicago, Rock Island & Pacific railway shops employ nearly 1,000 men. Other industries are pork-packing, and the manufacture of flour, cereals, pumps, wind-

mills, starch, furniture, agricultural implements, dairy, creamery, and egg supplies, wagons and carriages, planing-mill products, and confectionery. There are 3 national and 5 other banks; and daily, weekly, and monthly newspapers. Cedar Rapids is the seat of Coe College (Presbyterian), has excellent public and private schools, a business college, and public and Masonic libraries. It has many handsome private residences and churches, hospitals, a post-office and Federal Court building, Masonic Temple, auditorium, and fine business and railway buildings. The first settlement at the rapids of the river was in 1845. The city was incorporated in 1856, and the charter revised in 1898. The mayor and city council are elected for two years. Pop. (1900) 25,656; (1910) 32,811.

CEDAR, or Red Cedar RIVER: rises in Dodge co., Minn., flows s.s.e. through Mower co., Minn., and eight counties of eastern Iowa, and enters the Iowa river at Columbus, some 30 m. from its junction with the Mississippi; length abt. 350 m.; Charles City, Waverly, Waterloo, Vinton, Cedar Rapids, and other towns are on its banks, which abound in Devonian and magnesian limestone. It is navigable only for short distances by small steamers, being dammed at nearly every town. Its waters are well supplied with bass.

CEDE, v. *sēd* [F. *céder*—from L. *cedĕrĕ*, to give up; It. *cedere*]: to give up; to yield; to relinquish or surrender to. Ce'ding, imp. Ce'ded, pp. Cession, n. *sĕsh'ŭn* [F. *cession*, a yielding up—from L. *cessĭōnem*—from L. *cessus*, given up]: the act of yielding up or granting. Cessible, a. *sĕs'ĭ-bl*, liable to give way; yielding. Ces'sibility, n. *-bĭl'ĭ-tĭ*, quality of giving way.

CEDILLA, n. *sē-dĭl'lă* [Sp. *cedilla* for zedilla: F. *cédille*]: a mark put under the letter *c* (thus ç), coming before the vowels *a*, *o*, and *u*, chiefly in F. and Sp. words, to show that it must be sounded like an *s*.

CE'DRATE: see Citron.

CEDRELACEÆ, *sē-dre-lā'cē-ē:* nat. ord. of exogenous plants, very nearly allied to *Meliaceæ* (q.v.), and distinguished chiefly by the winged seeds, numerous in each cell of the fruit, which is a capsule. The known species are few, all tropical or sub-tropical trees or shrubs, with pinnate leaves, most of them trees valuable for their timber. To this order belong mahogany, satin-wood, toon, Barbadoes cedar, the yellow-wood of New South Wales, etc. The barks of some species are febrifugal. That of *Soymida febrifuga*, the Rohuna or E. Indian mahogany, has been exported as a medicine.

CEDRON, *sē-dron:* medicinal extract from the seeds of *simaba cedron*, a tree of the order *Simarubaceæ*, found in Central America and Colombia, where Cedron is used to cure the bite of serpents and to prevent hydrophobia. Applied either externally or internally, it acts as a bitter principle, and is claimed to possess antiperiodic virtues.

CEFALU, *chā-fâ-lô:* town of Sicily, on the n. coast, 47 m. e.s.e. of Palermo. It is at the foot of a promontory, which overlooks the beautiful bay of Cefalu, and it is surrounded by old walls. It has a cathedral, begun 1132, with a fine façade; and the ruins of a Saracenic castle occupy a neighboring hill. As a seaport, it has little traffic. The inhabitants are engaged chiefly in fishing. Pop. abt. 14,000.

CEIL, v. *sēl* [It. *cielo;* F. *ciel,* heaven, sky—from mid. L. *celum,* heaven, sky, then applied to a canopy, the inner roof of a room; afterward confounded with *seal,* in the sense of *to close*]: to cover the inner roof of a building with anything, as with plaster or wood. CEIL'ING, imp. N. the roof of a room; in *OE.,* a canopy and side hangings of a bed. CEILED, pp. *sēld.*

CEILING, inner roof of a room; a term probably suggested by the use of arched coverings for churches, and even for rooms, which prevailed in the middle ages, and was not unknown to the Romans. Whether the term was further suggested by the habit of tinting ceilings of a blue color, and decorating them with stars, or whether that usage arose from the use of the term already introduced, is more doubtful. Arched ceilings among the Romans were known by the name *cameræ* or *camera,* the Greek origin of which seems to furnish an argument in favor of the view that the arch was known to the latter people. The camera was formed by semicircular beams of wood, at small distances from each other, over which was placed a coating of lath and plaster. In later times, the cameræ were frequently lined with plates of glass, whence they were termed *vitreæ.* But the ceilings most common among the Romans were flat, the beams, as in modern times, having been at first visible, and afterward covered with planks and plaster. Sometimes hollow spaces were left between the planks, which were frequently covered with gold and ivory, or paintings. The oldest flat ceiling in existence is believed to be that of Peterborough cathedral. Like that at St. Albans Abbey, it is made of wood, and plastered over like a modern ceiling. Ceilings of churches, in the middle ages, were generally painted and gilded in the most brilliant manner; and many existing ceilings still show traces of early decoration of this kind. The older ceilings generally follow the line of the timbers of the roof, which, in the Early English and Decorated, are often arranged to give the shape of a barrel vault. In ceilings of this description there are seldom many ribs, often only a single one along the top. In the perpendicular style, the ceiling often consists of a series of flat surfaces or cants, formed on the timbers of the roof. Though sometimes altogether destitute of ornament, they are more frequently enriched with ribs, dividing them into square panels, with bosses (q.v.) or flowers at the intersections. Wooden ceilings are sometimes formed in imitation

of stone groining, with ribs and bosses, examples of which are at York, Winchester, and Lincoln. In the Elizabethan age, ceilings were generally of plaster, but they were ornamented with ribs having bosses or small pendants at the intersections. It is not unusual for the ceiling immediately over the altar, or the roodloft in a church, to be richly ornamented, while the rest is plain.

CELANDINE, n. *sĕl′ăn-dīn* [OF. *celidoine;* Gr. *chelido′nĭŏn;* L. *chelido′nĭă*—from Gr. *chelĭdōn,* the swallow], (*Chelidonium*): genus of plants of the nat. ord. *Papaveraceæ* (the poppy family), having a corolla of four petals, and a pod-like capsule. The common C. (*C. majus*) is a perennial, with pinnate leaves, lobed leaflets, and yellow flowers in simple umbels, frequent under hedges, in waste places, etc. It flowers from May to Sep. The root, stem, and leaves, when fresh, have a disagreeable smell, and are full of a yellow juice, which is very acrid, causing inflammation when applied to the skin. Celandine is sometimes used in medicine; it is a drastic purgative, and in large doses an active poison; in small doses it is said to act beneficially on the lymphatic system and on the organs of secretion, and to be useful in scrofulous diseases, disease of the mesenteric glands, etc. The fresh juice, applied externally to warts, corns, etc., removes them by stimulating them beyond what their languid vital powers can bear. Mixed with milk it is applied to the eye for the cure of opacities of the cornea, but is a remedy that requires great caution in its use.

CELADON, n. *sĕl′ă-don*: a pale green color.

CELA′NO, Lake of: see Fucino, Lake of.

CELANTES, n. *sē-lăn′-tēz* (a word without etymological meaning but designed to have its letters symbolic): in logic, an indirect mode of the first figure of the syllogisms, reducible to Celarent (q.v.). See Syllogism and Mood in logic.

CELARENT, n. *sĕ-lāy′-rĕnt,* (a word without etymological meaning, but designed to have its letters symbolic): in logic, the second mode of the first figure of syllogisms. See Syllogism and Mood in logic.

CELASTRA′CEÆ: see Spindle-tree.

CELEBES, *sĕl′e-bĭz:* large island in the Eastern archipelago, e. of Borneo, between 5° 45′ s. lat.—1° 45′ n. lat., and 118°—126° e. long.; 45,150 sq. m. It is irregular in shape, and four peninsulas springing from a common root form the large bays of Gorontalo and Tolo, and the gulf of Boni. Celebes is covered with mountains and valleys; a chain running throughout it sends spurs into the peninsulas. Some are active volcanoes, and earthquakes are frequent. The peak of Bonthaim is 9,788 ft. high. The island has a rich soil and extensive pastures. The vegetable kingdom gives sago, cocoa-nuts, bread-fruit, coffee, tamarinds, bananas, oranges, pine-apples, maize, rice, tobacco, sugar-cane, indigo, sandal wood, sapan-wood,

and ebony-wood. The animals include excellent horses, buffalo, cattle, wild swine, elands, goats, sheep, parrots, lories, birds of paradise, beautiful butterflies, wild bees, etc. The minerals are gold, iron, coal, and salt. The people spin and weave cottons. Pop., of various races, reckoned at about 396,868, of whom about 7,000 are Chinese and 2,000 are Europeans. The chief town is Macassar, which gives name to the strait between Celebes and Borneo. In 1874, Nov., a fire destroyed 774 houses of the town.

CELEBRATE, v. *sĕl′ĕ-brāt* [L. *celebrātus*, visited in numbers, celebrated—from *cĕlĕber*, much resorted to: It. *celebrāto—lit.*, to cause to enter largely into the talk of men]: to praise or extol; to render famous; to keep holy; to honor by marks of joy or by ceremonies. CEL′EBRATING, imp. CEL′EBRATED, pp.: ADJ. famous; renowned. CEL′EBRA′TOR, n. one who. CEL′EBRANT, one who performs a religious act in a church publicly; the officiating priest in the Eucharist. CEL′EBRA′TION, n. *-brā′shŭn*, the performance of solemn rites; the distinguishing by marks of joy or respect; praise; renown. CELEBRITY, n. *cĕ-lĕb′rĭ-tĭ* [F. *célèbrité*—from *célèbre*, celebrated, famous—from L. *cĕlĕbrem*, much frequented, famous]; fame; renown; distinction or notoriety; a distinguished or famous person. CELEB′RITIES, n. plu. *-rĭ-tĭz*, distinguished or famous persons.—SYN. of 'celebrate': to commemorate; distinguish; honor; solemnize;—of 'celebrated': distinguished; famous; renowned; illustrious.

CÉLÈBRE, a. *sā-lĕb′r* [F.]: celebrated; famous. CAUSE CÉLÈBRE, *kōz sā-lĕb′r* [F. *cause*, a cause]: a famous cause; a remarkable trial in a court of justice.

CELERES, *sĕl′ėr-ēz:* according to Roman antiquity a body of 300 young men selected from the most illustrious families to form a permanent body-guard for the reigning king. This aristocratic guard is said to have been established by Romulus and used by him both in war and peace. The etymology of celeres is variously given. Some writers derive it from their first leader, Celer, who is said to have slain Remus, but the majority are inclined to associate it with the Greek *Keles*, in reference to the quickness of their service. The celeres, who were sumptuously mounted, were under the command of the *Tribunus celerum*, who stood in the same relation to the king as the *Magister equitum* did in a subsequent period to the dictator. He occupied the second place in the state, and in the absence of the king had the right to convoke the comitia. Candidates for the celeres had to be approved by the suffrages of the curiæ of the people, each of which furnished ten.

CELERITY, n. *sĕ-lĕr′ĭ-tĭ* [F. *célérité*—from L. *celerĭtātem*, swiftness—from *celer*, swift: It. *celerita*, quickness]: swiftness; speed in anything, as actions, thoughts, or of bodies on or near the earth;—*velocity* is more frequently applied to objects remote or inappreciable, as the planets, sound, light, etc. *Note.*—Speaking generally, *velocity* is mere rate

of motion, *celerity* is despatch or quickness in doing anything; a railway train may go at a high *velocity*, a man may eat his dinner with great *celerity*.

CELERY, n. *sĕl'ĕr-ĭ* [F. *céleri*—from It. *seleri*], (*Apium*): genus of plants of the nat. ord. *Umbelliferæ*, distinguished by a mere rudimentary calyx, roundish entire petals, very short styles, and roundish fruit. The common celery (*A. graveolens*) is found wild in most parts of Europe and in America, in ditches, brooks, etc., especially near the sea and in saline soils. Its leaves are dark green and smooth, its petals involute at the tip. The wild plant, called also SMALLAGE, has a stem about two ft. high, a tapering slender root, a penetrating, offensive odor, a bitterish, acrid taste, and almost poisonous qualities. By cultivation it is so much changed that its taste becomes agreeably sweetish and aromatic, while either the leaf-stalks much increase in thickness, or the root swells in a turnip-like manner. These parts, blanched, are much used as a salad or to impart flavor to soups, etc., and sometimes as a boiled vegetable. They contain sugar, mucilage, starch, and a substance resembling manna sugar, which acts as a stimulant, particularly on the urino-genital organs, so that a very free and frequent indulgence in the use of celery, cannot, in ordinary circumstances, be altogether favorable to health. Two principal varieties of celery are cultivated, that most common in Britain having long, thick leaf-stalks, which are more or less tubular, sometimes almost solid, and after blanching, either white or more or less tinged with red; while the other, called TURNIP-ROOTED celery or CELERIAC, is chiefly remarkable for its swollen, turnip-like root, and is in most general cultivation on the continent of Europe; its root is the part eaten and not the blanched stalks as in celery. The 'red' varieties of celery are esteemed rather more hardy than the 'white.' The blanching of the leaf-stalks is accomplished generally by drawing up earth to the plants, which are transplanted from the seed-bed into richly-manured trenches; and as they grow the trenches are filled up and the earth finally raised into ridges, above which little more than the tops of the leaves appear. Celery is thus obtained for use throughout the winter. Celery seed is often used for flavoring when the leaf stalks cannot be obtained.—Another species of celery (*Apium australe*) grows abundantly in wet places on the shore about Cape Horn and in the neighboring Staten Island. It is a large, hardy, and luxuriant plant, described as wholesome and very palatable, nearly equal in its wild state to our garden-celery. It seems well worthy the attention of horticulturists.

CELESTIAL, a. *sĕ-lĕst'yăl* [OF. *célestiel;* F. *céleste*, heavenly—from L. *cœles'tis*, heavenly—from L. *cœlum*, heaven; connected with Gr. *koilos*, hollow: It. *celeste*]: heavenly; of or pertaining to heaven; belonging to the visible sky: N. an inhabitant of heaven. CELES'TIALLY, ad *-lĭ.* CELES'TIALIZE, v. *-yăl-īz,* to make fit for heaven.

CELES′TIALI′ZING, imp. CELES′TIALIZED, pp. *-īzd.* CELESTINE, n. *sĕ-lĕs′tĭn,* a mineral, bearing the same relation to strontia (q.v.) that heavy spar bears to baryta. It is essentially sulphate of strontia ($StOSO_3$) with occasional admixture of sulphate of baryta, carbonate of lime, oxide of iron, etc., in small proportions. It much resembles heavy spar, but it is not quite equal to it in specific gravity; is usually blue, and is named from its color; often of a very beautiful indigo blue; sometimes colorless, more rarely reddish or yellowish. Its crystallization is rhombic, like that of heavy spar. Most beautiful specimens of crystallized celestine are found in Sicily. It is used as a source of strontia. CELESTIAL EMPIRE, China, popularly so named from the claim of its emperor to be the son of Heaven.

CELESTINES, or CELESTINS, n. plu. *sĕl′ĕs-tinz:* in the Rom. Cath. Church, religious order of hermits of St. Damianus, founded by Peter de Morrone about 1264 and confirmed as a monkish order by Urban IV. 1264 and '74. They called themselves Celestines when their founder ascended the papal chair under the name of Celestine V. They are regarded as a branch of the great order of St. Benedict, whose rule they follow; they wear a white garment with black hood and scapulary, and live a purely contemplative life. In the 13th and 14th c. the order rapidly spread through France, Italy, and Germany, but subsequently decayed. The French Celestines were secularized by order of Pope Pius VI., 1776–78; so also were the Neapolitan Celestines. In the present day the order is almost extinct.

CELESTITE, *sĕl′-ĕs-tīt*: a native form of strontium sulphate, $SrSO_4$, crystallizing in the orthorhombic system, and also occurring in fibrous and radiated forms. The crystals resemble those of barite, and are usually tabular or prismatic. They have a hardness of from 3 to 3.5, and a specific gravity of 3.96. Celestite is commonly white with a vitreous lustre, but it also occurs with a pronounced bluish tinge, from which circumstance it received its name. When found in quantity it is a useful source of strontium. Fine crystals of it occur in the limestone about Lake Erie. Other important localities are in Sicily, Hungary, England, Canada, West Virginia, and California. Varieties containing large amounts of calcium or of barium are called calciocelestite and barytocelestite respectively; and the mineral itself is often called celestine.

CELIAC, or CŒLIAC, a. *sē′lĭ-ak* [Gr. *koilia,* the belly]: pertaining to the intestinal canal. CELIAC AXIS, or CELIAC ARTERY, an artery arising from the abdominal aorta which almost immediately divides into branches passing to the stomach, the spleen, and the liver. CELIAC PASSION, a flux or diarrhea of undigested food.

CELIBACY, n. *sĕl′ĭ-bă-sĭ* [F. *célibat,* celibate, celibacy—from L. *cœlĭbātus,* celibacy—from L. *cœlebs,* unmarried, single]: a single life; an unmarried condition. CELIBATE,

n. *sĕl'ĭ-bāt*, the state of being unmarried; one who. In Genesis 1–28 God is stated to have said to Adam and Eve, 'Increase and Multiply;' notwithstanding this command even in the Old Testament the opinion had become prevalent that celibacy was favorable to an intimate union with God. This took its origin, according to the opinion of many scholars, in the wide-spread philosophy of a good and an evil principle. The body, consisting of matter, the seat of evil, was looked upon as the prison of the pure soul, which was thought to be defiled by bodily enjoyments. Among the Jewish sect of the Essenes, accordingly, a life of celibacy was held to be the chief road to sanctity. These ascetic views naturally led, in the first place, to the disapproval of second marriages. While, therefore, in the early Christian churches, every one was left at liberty to marry or not as he thought fit, the objection to second marriages soon became generally spread.

By the 2d. c., however, the unmarried life generally had begun to be extolled, and to be held necessary for a life of sanctity, though several, at least, of the apostles themselves had been married. Two passages of Scripture (1 Cor. vii. and Rev. xiv. 4) were specially cited as proving that celibacy was the genuine condition of a Christian; and with the platonizing fathers of the 2d and 3d c., the unmarried of both sexes were held as standing higher than the married. Accordingly, though there was no express law against the marriage of the clergy, many, especially of the bishops, remained unmarried; a second marriage was, in their case, already strictly prohibited.

As the bishops of Rome rose in consideration, and gradually developed a firmer church government, they called upon all who belonged to the clerical order to live for the church alone, and not marry. This requirement met with constant resistance; still, it became more and more the custom, in the 4th c., for the higher clergy to refrain from marriage, and from them the custom went over to the lower orders, and to the monks. Provincial synods now began expressly to interdict the clergy from marrying. The council of Tours (566) suspended for a year all secular priests and deacons who were found with their wives; and the emperor Justinian by an edict declared all children born to a clergyman after ordination, to be illegitimate, and incapable of inheritance. There were still, however, many married priests who resisted the law; and found encouragement in the opposition which the Greek Church made to that of Rome on the question of celibacy. The council at Constantinople 692, declared, in opposition to the Church of Rome, that priests and deacons might live with their wives as the laity do, according to the ancient custom and ordinance of the apostles. The orthodox Greek Church has adhered to this decision. Priests and deacons in that church may marry before ordination, and live in marriage after it, though they are not allowed to marry a second time. However, only a priest living in celibacy can be chosen as a bishop or patriarch.

## CELIBACY.

The Church of Rome continued its endeavors to enforce the law of celibacy; though, for several centuries, with only partial success. There still continued to be numbers of priests with wives, though the councils were always issuing new orders against them. Popes Leo IX. (1048–54) and Nicholas II. (1058–61) interdicted all priests that had wives or concubines for the exercise of any spiritual function, on pain of excommunication. Alexander II. (1061–73) decreed excommunication against all who should attend a mass celebrated by a priest having a wife or concubine. This decision was renewed by Gregory VII. in a council at Rome 1074, and a decretal was issued that every layman who should receive the communion from the hands of a married priest should be excommunicated, and that every priest who married or lived in concubinage, should be deposed. The decree met with the most violent opposition in all countries; but Gregory succeeded in carrying it out; and though individual instances of married priests were still found in the 12th and 13th c., the celibacy of the Rom. Cath. clergy was established, and has since continued both in theory and in practice.

The violence thus done to human nature did not fail to avenge itself in those rude times. The licentiousness and corruption of the priests and monks became in many cases boundless, and it was in vain that strict individuals, as well as councils, strove against it. The immorality and debasement of the clergy became a reproach and by-word in the mouth of the people, and gave a powerful impulse to the religious reform that began in the 16th c. The leading reformers declared against the celibacy of the clergy as unfounded in Scripture, and contrary to the natural ordinance of God, and Luther set the example of marrying. This was not without effect on the Rom. Cath. clergy, and the question of the abolition of celibacy was raised at the council of Trent (1563). But the majority of voices decided that God would not withhold the gift of chastity from those that rightly prayed for it, and the rule of celibacy was thus finally imposed on the ministers of the Rom. Cath. Church. Those who have received only the lower kinds of consecration may marry on resigning their office. For all grades above a subdeacon, a papal dispensation is necessary. A priest that marries incurs excommunication, and is deprived of all priestly faculties. If a married man wishes to become a priest he receives consecration only on condition that he separate from his wife, and that she of her free will consent to the separation and enter a religious order, or take the vow of chastity. The priests of the united Greek rite have received permission from the popes to continue in marriage, if entered into before consecration, but on condition of always living apart from their wives three days before they celebrate mass.

Notwithstanding these decisions, the contest against clerical celibacy has often been renewed, in recent times, both within and without the Rom. Cath. Church. In fact, all attempts at innovation within the bosom of

Catholicism are connected with the attack on celibacy, the abolition of which would deeply affect the constitution and position of that church. Between 1817 and 1848 the propriety of putting an end to compulsory celibacy had been discussed publicly in most European countries, either by clergy, legislatures, or the press. The German Catholics (q.v.) abolished celibacy. In Austria, the state took the side of the pope, who, in a bull of 1847, had added fresh stringency to the rule of celibacy. The permission of marriage to the clergy was one of the principal contentions of the Old Catholics in Germany 1874, and is maintained by the Separatist Church. Père Hyacinthe in France vigorously upheld the demand for legitimating clerical marriages. (See BACHELOR.)

CELL, n. *sĕl* [L. *cella*, a hiding-place: F. *cellier*, a cellar: It. *cella*, a cell, a cellar: Gael. *ceil*, a cell—*lit.*, a hut or quarters for slaves]: a small, confined room; an apartment in a prison; a small cavity; as of a honey-comb; a private room in a nunnery or monastery; one of the vesicles of protoplasm out of which the bodies of plants and animals are primarily built up. CELLED, a. *sĕld*, furnished with cells. CELLA, n. *sĕl'lă*, the body or principal part of a temple. CELLAR, n. *sĕl'lĕr* [F. *cellier*—from mid. L. *cellārĭŭm*, a storeroom for wine and provisions]: a storehouse for wine, oil, and provisions; a room or place under a house used for storing coals, etc. CEL'LARAGE, n. *-āj*, the capacity of a cellar or cellars; range or system of cellars; charge for cellar-room. CEL'LARET n. *sel'lă-rĕt'*, an ornamental case for bottles. CELLARER, purveyor or steward, in charge of provisions, and keeping the accounts, of a household; especially under the Roman emperors, or in a monastery. CEL'LARIST, n. CEL'LARMAN, n. one who has charge of the cellar. CELL-WALL, n. in *physiology*, the external, vesicular membrane, which encloses the germinal substance or protoplasm. VAULTING-CELL, in *arch.*, the hollow space between the principal ribs of a vaulted roof.

CELL, BATTERY. See BATTERY, ELECTRIC.

CELL, ELECTRIC. See BATTERY, ELECTRIC.

CELLINI, *chĕl'lē'nē*, BENVENU'TO; 1500–70 (or 72); b. Florence: celebrated Italian gold-worker, sculptor, founder, and medailleur, remarkable not only for his skill as an artist but also for his checkered life. He showed skill first as a chaser and gold-worker. His autobiography is remarkably curious and interesting, presenting a complete picture of the author's life and character; his activity, his extraordinary weaknesses, the impetuosity of his passions, the perilous circumstances in which his quarrelsome disposition placed him (for Cellini thought nothing of committing manslaughter in a moment of rage), and the ludicrous vanity and credulity which are never absent from him. The book is also of great value in a historico-social point of view, but gives no favorable impression of either the personal or the social morals of the time.

At an early period, having been banished from Florence

in consequence of an 'affray,' Cellini went to Rome, where he was employed by many distinguished patrons of art, but afterward was allowed to return to Florence. Another 'affray' compelled him to flee to Rome a second time, where he secured the favor of Clement VII. Cellini, by his own account, was as great in arms as in art; he declares that it was himself who killed the Constable Bourbon and the Prince of Orange at the siege of Rome. His reckless conduct for some years compelled his constant shifting between Rome and Florence, Mantua and Naples. In 1537 he went to the court of France, where he was very honorably received. Illness, however, induced him to return yet once more to Rome, where he had the misfortune to be imprisoned on a charge of plundering the treasures in the castle of St. Angelo during the siege of Rome. At length he was liberated, through the intercession of the Cardinal of Ferrara, for whom he executed, out of gratitude, a fine cup and various other works. He now accompanied his deliverer to France, and entered the service of Francis I.; but having incurred the displeasure of the ruling favorite, Madame d'Estampes, he returned to Florence—not, however, until, as usual, he had settled some matters with his 'sword'—where, under the patronage of Cosmo de' Medici, he executed several fine works in metal and marble—among them the celebrated bronze group of *Perseus with the Head of Medusa.* In his 58th year he began to write his autobiography. In 1876, a number of Cellini's original papers were found. See the magnificent monograph of Cellini by Eugene Plon (1882).

CELL, PRIMARY. See BATTERY, ELECTRIC.

CELL, SECONDARY. See BATTERY, STORAGE.

CELL, STORAGE. See BATTERY, STORAGE.

CELL-THEORY, in Physiology: theory of the cellular composition and origin of the different parts of plants and animals. A cell is a microscopic portion or bit of protoplasm (q.v.) either with or without a wall, and with usually, probably always, a nucleus. Cells are originally more or less spherical sacs, and the protoplasmic contents is the cell, that is, its dynamic portion. The cell is the morphological unit of the organic world. The size of cells varies, but they are mostly microscopic, the sperm cell (spermatozoon) being even less than 0.003 mm. in diameter. The egg-cells—for all unfertilized eggs are simple cells—may, as in that of the fowl, goose, or ostrich, be several inches in diameter. The largest unicellular organisms are the giant plasmodia of the *Mycetozoa.* While the free cells are spherical, when they are united into tissues they may by mutual pressure form polygonal or prismatic bodies, or may send out spindle or star-shaped branching processes, or a nerve-cell may send out a long, fine nerve-fibre.

*History of the Cell Theory.*—The term 'cell' was first used in the 17th century by Hooker, Malpighi, and Grew in writing of vegetable anatomy. They had in mind

small chambers surrounded by firm walls and filled either with air or fluid. The English botanist Brown discovered the nucleus. Schleiden then framed his cell theory, laying emphasis on the nucleus. While his view was somewhat erroneous, Schwann applied Schleiden's views to the animal world, and the cell theory was spoken of as the Schleiden-Schwann theory. From their point of view the cell-membrane was regarded as most important for the function of the cell; but, after that, the conceptions as to the true nature of the cell completely changed. It was seen that the protoplasm was the essential part of the cell. It was observed that it owed its origin to a previous cell, a living mother-cell. Hence Virchow's aphorism, *Omnis cellula ex cellula*. Then followed the discovery of protoplasm (q.v.) by Dujardin, Mohl, Schultze, and others, so that now the cell is regarded as a lump or bit of protoplasm.

*Nucleus.*—This is the central specialized portion of the cell, and the part in which reproduction begins. The nucleus may vary in shape in each kind of cell. While usually spherical it may be oval, club-shaped, bent into a U, or be branched. It also varies much in size, sometimes forming almost the whole of the cell, but sometimes so small as to be found with difficulty, and only by employment of a special technique. The substance of which the nucleus is composed is distinguished from protoplasm, besides other characters, by its greater coagulability in certain acids (acetic and chromic).

*Structure of the Nucleus, Chromatin and Chromosomes.*—A portion of the nucleus reacts to certain staining-fluids (carmine, hæmatoxylin, and safranin); this is therefore called 'chromatin' (by some 'nuclein'). The other substance, which does not stain, or only under special conditions, is called achromatin or linin. The chromatin forms a honeycomb structure (by other authors regarded as a network or reticulum) filled with a nuclear fluid, bounded externally by a nuclear membrane.

The chromatin enters into close relations with a less stainable substance, the plastin or paranuclein, also sharply distinct from achromatin. In the nuclei of *Protozoa*, plastin and chromatin are usually intimately united, the latter being embedded in the plastin. Both of these substances are usually so closely and regularly distributed as fine granules on the reticulum that the entire nucleus appears to be uniformly chromatic. The mixture sometimes collects into one or more special bodies called the chromatic nucleoli. The nucleolus is usually a rounded body (Hertwig).

In the *Metazoa*, or many-celled animals, the plastin (apparently not the whole, but a surplus) is separate from the chromatin. Thus there occur, in the nuclei of many eggs, nuclei which contain, the one chromatin, the other exclusively plastin.

*Significance of the Cell Nucleus.*—It is now well known that the seat of the reproduction process is in the nucleus.

It has lately become apparent that the nucleus determines the character of the cell, and, again, that it is also 'the bearer of heredity' (see HEREDITY). Within the nucleus the chromatin is now supposed to control the functions of the protoplasm, and therefore is the bearer of heredity, while the achromatin is the seat of contractility, and as such plays a part in cell-multiplication (Hertwig).

*The Centrosome.*—In addition to the nucleus there frequently occurs a special body in the protoplasm, called the 'centrosome.' It is supposed to be a derivative of the nucleus, either a part of the achromatin which has left the nucleus; or a second nucleus which by degeneration has lost the chromatin and retained only the active nuclear substance, the achromatin. The centrosome functions as a specific organ of cell-division which controls both the division of the nucleus and that of the cell itself. See MITOSIS; PROTOPLASM; REPRODUCTION.

Consult: Hertwig, *The Cell; A Manual of Zoology;* Wilson, *The Cell in Development and Inheritance.*

CELLULAR, a. *sĕl′ū-lėr* [L. *cellula*, a little cell—from *cella*, a hiding-place (see CELL)]: consisting of small cavities or hollows. CEL′LULATED, a. *-lā-tĕd*, formed with cells. CELLULE, n. *sĕl′ūl*, a little cell. CELLIF′EROUS, a. *-lĭf′ėr-ŭs* [*cell*, and L. *fero*, I carry, I bear]: producing cells. CEL′LULIF′EROUS, a *-ū-lĭf′ėr-ŭs* [L. *cellula*, a little cell, and *fero*, I bear]: producing little cells. CELLULINE, n. *sĕl′ū-lĭn*, or CELLULOSE, n. *sel′ū-lōs*, a substance forming the cell-walls of plants, and the chief part of woody tissue. ADJ. containing cells. CELLULAR TISSUE, tissue formed by the union of minute globules or bladders, named 'cells,' 'cellules,' 'vesicles,' or 'utricles;' an aggregation of minute membraneous vesicles filled with fluid: see CELL THEORY (*Vegetable Histology*).

CELLULAR PLANTS, *sĕl′ū-lėr:* plants consisting entirely of cellular tissues without proper vessels of any kind. It was formerly attempted by De Candolle and others to unite all the lowest plants destitute of vascular tissue (see CELL THEORY, *Vegetable Histology*) under the general title of *Cellulares*, as opposed to the *Vasculares*, including all the higher plants. Although this classification is long disused, the term 'cellular plants' is often employed to distinguish the fungi, algæ, lichens, characeæ, liverworts, and mosses (q.v.), from the higher or vascular cryptogams—ferns, horsetails, lycopodiaceæ and selaginelleæ, and isoeteæ. See Sachs's, Prantl's, or other recent *Manual of Botany.*

CELLULOID, *sĕl′ū-loyd:* a hard, perfectly homogeneous, compact substance, closely resembling ivory, produced by mixing pyroxylin (gun cotton or collodion cotton) with camphor, by kneading them together, adding the pyroxylin to melted camphor, or dissolving each in an appropriate solvent and mixing these. The proportion of the constituents varies but is usually about 2:1 of camphor. If coloring matter be mixed with the C. during manufacture, arti-

ficial coral, amber, malachite, etc., result. C. is an excellent material for making backs of brushes, handles of knives or umbrellas, combs, and a vast number of useful and ornamental articles.

CELLULOSE, *sĕl'lu-lōs:* substance secreted by the living protoplasm of a vegetable cell to form its investing membrane or cell-wall. For account of mode of formation of ligneous, corky, and colloid change, mode of arrangement and union in cell-walls, etc., see CELL THEORY (*Vegetable Histology*). The material remaining after treatment of vegetable tissues with dilute alkalies and acids, weak oxidants and solvents for fats is regarded as being pure C.; it consists of carbon, hydrogen, and oxygen in the proportions ($C_6H_{10}O_5$, its molecular weight being unknown. On the large scale C. is usually prepared by digesting wood, straw, rags, etc., with heated calcium bisulphite (see CALCIUM PAPER) solution under pressure. This dissolves out the non-cellulose constituents and, after bleaching, the product is nearly pure C. It dissolves in Schweitzer's Reagent (q.v.), and on evaporation of the liquid a glassy mass is left. Paper dipped in this same liquid becomes water-proof. By the action of alkali cellulose undergoes a change, the exact nature of which is not understood. The fibres become shorter and stronger and take up dyes far more readily, the colors being greatly superior to those of ordinary C. This process is called 'mercerising', from the name of the discoverer. Chemically, C. acts as a complex alcohol. Sulphuric acid of moderate concentration converts it into glucose, (q.v.), and when heated with alkalies it forms oxalic acid. C. is a typical COLLOID (q.v.).

CELSUS, *sĕl'sŭs:* Epicurean philosopher, but tinged with Platonism, lived in the 2d c. after Christ, and wrote, after 150, under the title *Logos Alethes* (the True Word), the first considerable polemic against Christianity. The book itself has perished; but considerable fragments have been preserved as quotations given by Origen in his answer, *Contra Celsum*, in eight books. In the fragments —which are very interesting, as showing the views of a heathen philosopher in regard to Christianity—C., with wit and acuteness, but without depth or earnestness of thought, prefers against the new religion charges of unphilosophicalness and blind credulity; and especially endeavors to convict Christians of self-contradiction in their spiritual doctrine contrasted with their anthropomorphic representations of Deity; in their religious arrogance contrasted with their confession of sinfulness; and in their views of the necessity of redemption. He also reproaches Christians with their party divisions and ever-varying opinion. With regard to his own positive doctrines he speaks of evil as necessary and eternal, as an essential property of the material world (*hyle*), sin as something that can never be entirely removed, and least of all through a vicarious sacrifice. He charges Christians with having wilfully altered their sacred writings.

CELSUS, Aulus Cornelius: Latin physician and writer who lived probably in the reign of Augustus. He was called the Roman Hippocrates because he generally followed the great 'Father of Medicine,' and introduced the Hippocratic system among the Romans. Celsus wrote not only on medicine, but also on rhetoric, history, philosophy, the art of war, and agriculture. His style is succinct and clear, but full of Græcisms. The only great work of his which survives is the *De Medicinâ*, divided into eight books. The portions relating to surgery are exceedingly interesting and valuable, because Celsus has there given an account of the opinions and observations of the Alexandrian school of medicine. The first edition of the *De Medicinâ* appeared at Florence, 1478. Celsus's works have been translated into several modern languages. A translation into English was made by Dr. Grieve, London, 1756. Among the best editions are those of Krause (Leip. 1766), Dr. Milligan's 2d ed. (Edin. 1831), and one at Cologne, 1835.

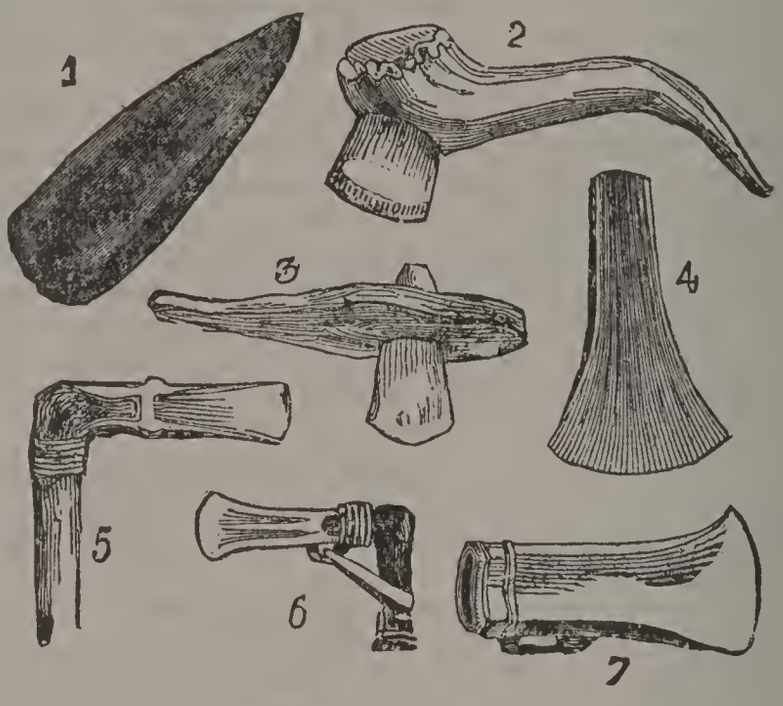
CELT, n. *sĕlt* or *kĕlt* ]L. *Celtæ;* Gr. *Keltai*, the Celts: W. *Celtiad*, an inhabitant of the wood or covert—*lit.*, one who inhabits wood and wild fastnesses]: one who speaks one of the Celtic languages, as the Gaels of Ireland and Scotland, and the *Kymry* of Wales and Bretagne; one of the great parent stock of southern and western Europe; a stone or bronze cutting instrument found in ancient barrows or tumuli. Celtic, a. *sĕl′tik* or *kĕl′tĭk*, pertaining to a Celt: N. the language of the Celts. Cel′ticism, n. *-tĭ-sĭzm*, a custom of the Celts, or an idiom of their language.

CELT [Lat. *celtis* (?), a chisel]: name by which certain weapons or implements of the early inhabitants of w. Europe are known among archæologists. Celts are either of *stone* or of *bronze*.

*Stone* celts vary in length from about one inch to 22 inches; but the most common size is from six to eight inches in length, and from two to three and one half inches in breadth. They are made of almost every kind of stone and show considerable diversity of shape, almost all, however, having more or less resemblance to the muscle-shell. Fig. 1 in the accompanying wood-cut shows a stone celt of the better kind. The ruder celts are generally of slate, shale, schist, or grit; the finer, of flint, porphyry, greenstone, syenite, or agate. Many of the finer celts are beautifully shaped and highly polished. A remarkable example of this class, the property of Sir Coutts Lindsay, found near St. Andrews, Scotland, is described by Sir David Brewster in the *Philosophical Journal* for 1823. Recently, a class of celts found in the later geological strata have excited much interest as well among archæologists as among geologists. They are obviously of the same type with the more common celts, but of ruder construction, as if fashioned by a more barbarous people. The stone celt was fastened into a handle of horn, bone, or wood, as shown in the accompanying wood-cut. Fig. 2 represents a celt of serpentine,

with a handle of deer-horn, found in one of the Swiss lakes, 1859, July. Fig. 3 represents a stone celt with a wooden handle, found in the county of Tyrone, Ireland.

*Bronze* celts vary in length from about one inch to eight or ten inches, the usual length being about six inches. They are sometimes ornamented with rudely incised lines or circles, and have occasionally been found wrapped up in linen, or inclosed in bronze cases or sheaths. They show much greater diversity of shape than the stone celt. As many as four classes have been distinguished by archæologists—1st. The simple wedge-shaped celt most nearly resembling the common form of the stone celt as in the accompanying wood-cut, fig. 4. 2d. The wedge-shaped celt with sides more or less overlapping, and a stop-ridge or elevation between the blade and the part which received the handle, as fig. 5. 3d. The wedge-shaped celt with sides




Celts.

greatly overlapping, with or without the stop-ridge, but with a loop or ear upon, and parallel to, its lower surface, as in fig. 6. 4th. The socketed celt, or the celt with a hollow to receive the handle, and generally, with a loop or ear upon its lower surface, as in fig. 7.

CELTIBERI, *sĕl-tĭ-bē′rĭ:* a powerful people of ancient Spain, supposed to have sprung from a blending of the Iberians or Spanish aborigines with Celtic invaders from Gaul. The Celtiberi inhabited a large inland district of the peninsula, corresponding to the s. w. half of Aragon, nearly the whole of Cuença and Soria, and a great part of Burgos. The Celtiberi were divided into four tribes, and for many years withstood the efforts of the Romans to subdue them, and it was not till after the campaigns of Sertorius that they began to adopt the Roman language, dress, and manners.

CELTIC CHURCH: the designation specially appropriated to the Christian church founded in North Britain among the Celtic population by Ninian, Columba (Columcillé) and other Celtic apostles. Of these the most notable is Columba. He was a native of Ireland and a scion of the royal line of Niall and a kinsman of Conal, king of Ailbe or Albin, later called Scotia. Columba and all his companion missionaries to the Scots and Picts were monks, and the churches he and they founded, were essentially monastic in their form of government. In the Holy Isle, Iona, called also after the name of the Gælic apostle, Hy-Columcillé, which was the metropolis of Celtic or Gælic Christianity, Columba was arch-abbot of all the monastic communities and in effect, though not in order or title, bishop, primate and patriarch of that whole province of the Church Catholic. The system of Church government was not diocesan, and though there were bishops in Scotia they appear to have simply exercised their spiritual and sacramental powers in conferring orders and performing other rites. The government of the Celtic Church appears to have been administered only by the arch-abbot and his subject abbots. The chief precepts of the Celtic monastic rule were poverty, chastity, obedience, and hospitality. They had also some peculiarities in the mode of administering baptism. Toward the end of the 11th century Margaret, queen of King Malcom Canmore, introduced into the Celtic Church of Scotland the usages of the Church of Canterbury in the observance of Lent and of Easter, in the celebration of the mass and other points of ritual; also she procured to be forbidden marriages between persons related by affinity. In these reforms she was aided by Lanfranc, Archbishop of Canterbury.

CELTIC NATIONS: a principal group of the Aryan stock (q.v.), dominating in pre-Christian times the greater part of western Europe, and represented to-day chiefly by the older populations of Ireland, north Scotland and Man (Gaelic), and of Wales, Cornwall and Brittany (Cymric).

The name Celt—properly and now more commonly written Kelt—as a designation for these cognate tribes comes to us through the Greek forms Keltoi and Keltai, Latinized as Celtæ. In the adjective form it is used by Hecatæus as early as 500 B.C. and in the noun form by Herodotus about 445 B.C. From philologic evidence Hyde deduces that it must be at least three to five hundred years older. As to its origin and original application there has been much speculation, all of which must remain mere guess work, as is the case with most ancient race names. It would be waste of time to discuss these various etymologies, none of which are probable or even fairly probable, ranging all the way from Hebrew to Gaelic. Following analogy in other parts of the world, it is probable that the word is of alien origin and was at first applied by a border people to some neighboring Keltic tribe and gradually extended in its application to include all others of

closely cognate stock. In this wider sense it would finally be adopted as a convenient designation by some of the Kelts themselves in their communication with other peoples, and this is probably the interpretation that must be put upon Cæsar's statement that it was thus used by the Gauls. Galli, Gallia, Gaul, Galicia (in Spain), Galatia, appear to be all from the same root, but Gael (Gaodal) is from a different source.

As it is unlikely that there was ever any comprehensive race term recognized among themselves, so we must probably dismiss also the idea of a former great 'Keltic Empire' stretching from Spain to the middle Danube, notwithstanding what Livy tells us of the Gallic king, Ambigatus, in the 8th century before Christ. Although we know that the Kelts were the ruling race of western Europe before the rise of the Roman power, and even so late as Cæsar's time could rally 300,000 men under a single general, yet there was probably never a time in history when all their widely scattered tribes acknowledged a single central rulership. The most that can be assumed is that the tribes of certain areas, particularly in the central territory, acted together with a certain solidarity when dominated by a masterful leader, and that the bond of common interest and heredity usually held the Keltic tribes in a loose alliance against the surrounding Germans, Ligures and Iberians. The Kelt is by nature anti-imperialistic, and the idea of race empire is a modern one.

It is foreign to our present purpose to discuss the origin of the Aryans, or of the non-Aryan races which everywhere preceded them in western Europe. Whenever and however the great wave of Aryan life and culture may have swept westward, the Kelts were the pioneers and vanguard of the movement. The earliest assignable habitat of the Keltic tribes, perhaps about 1000 B.C., included what is now northern and northeastern France, all or most of Belgium, western and southwestern Germany, western Switzerland, and probably a considerable part of Britain and Ireland. Roughly speaking, they held from the Rhine to the Loire, with the sources of the Danube and the slopes and valleys of the Alps. Along the Austrian border some tribes seem already to have pushed beyond these limits, but their title was disputed by alien races. East of the Rhine were the German tribes; beyond the Alps were the Etruscans, and somewhat further west and extending beyond the Rhone were the Ligures; while southwest of the Loire and extending across the Pyrenees into the Spanish peninsula were the powerful Iberian tribes, which had probably effected settlement also in Britain and Ireland. With all these the Kelts held hereditary and generally successful conflict, pressing steadily outward except along the Rhine, where the Germans held their own. Far in the south, Rome, destined to absorb or profoundly influence them all, was not yet born.

Before the year 600 B.C. the Kelts had pushed back the

Iberians from the Loire to the Garonne, and had swarmed across the Pyrenees into the Spanish peninsula, where they held the Atlantic province of Galicia, from which, according to tradition, the Gaelic colony reached Ireland. In the centre of the peninsula they mingled with the native stock, thus originating the warlike Keltiberians, the ancestors of the modern Spaniard. The Gaelic colonization of Ireland may belong to this period, while the Cymric occupation of Britain was probably earlier. About the year 600 B.C. several powerful Keltic tribes crossed the Alps and seized from the Etruscans the plains of Lombardy and the Po as far south as Ancona upon the Adriatic. Milan and Verona thus became Keltic capitals of the region known later as Gallia Cisalpina. In the year 390 B.C. another great Keltic army, under Brennus (Brian?) swept across Etruria, and, angered at a violation of neutrality by the Roman ambassadors, stormed Rome itself, and retired only on the payment of an enormous ransom. From this period the conflict between the two races continued with intermissions for a century until, having subjugated or exterminated her nearer neighbors, Rome took up in earnest the reduction of the Gallic provinces of Italy. In 284 B.C. the Senones, who had led the sack of Rome, were defeated and practically exterminated by Dolabella. In 215 B.C. the Boii were driven back and the territory of the Insubres taken. In 192 B.C. the Boii, who in the meantime had aided Hannibal's invasion, were, after his withdrawal, driven across the Alps, taking refuge chiefly in Bohemia, which derives its name from them. The lands of the Keltic tribes in northern Italy were now parceled out to Roman settlers; the Roman laws—but not the rights of citizenship—were extended over those Kelts who remained; and the Latinizing process was made so complete that by 150 B.C. nearly all distinctive Keltic characteristics of language and custom had disappeared. The Ligures, Etruscans, Samnites and others had already met the same fate, and before the dawn of the Christian era the whole peninsula was Roman.

In the Spanish peninsula the Keltic and Keltiberian tribes, already long accustomed to Phenician and Grecian culture through traders and several flourishing colonies planted in their midst were for the most part brought under the rule of Phenician Carthage in a war of invasion and conquest extending over 17 years, from 238 B.C. to 221 B.C., under successive direction of the generals Hamilcar and Hasdrubal. The tribes of pure Iberian (Basque) stock north of the Ebro were still unconquered, and Rome, jealous of her great maritime rival, now interposed successfully to make that stream the limit to further Carthaginian advance. A dispute two years later in regard to the control of the Greco-Italian colony of Saguntum (now Murviedro, north of Valencia) gave the Romans excuse for the second Punic war, ending in 206 B.C. with the total expulsion of the Carthaginians from the peninsula. Free now to work their will, the Romans broke all the pledges

by which they had secured the favor of the native tribes, and ruled with such cruel hand that in 181 B.C. the whole country rose in desperate revolt that continued, with short breathing spells of temporary triumph on either side for over a century and a half, necessitating, for the first time in Roman history, the employment of a standing army of 40,000 men. The most notable event of the earlier struggle was the storming and destruction of the Keltiberian city of Numantia in 133 B.C. by Scipio Africanus after its defenders had twice repulsed a Roman army and withstood a siege of more than a year until brought to starvation. The most heroic character was the Lusitanian chief, Viriathus, who for years defied the power of the invader, at one time even compelling the unconditional surrender of a Roman consul and the solemn pledge of independence for his country, but was at last murdered while sleeping in his tent by assassins in the pay of Rome. The death of Sertorius—himself an exiled Roman—also by Roman assassination in 73 B.C. crushed the Keltiberian resistance, although the mountaineers of Iberian stock, the modern Basques, were not finally reduced until 19 B.C., under the Emperor Augustus, by whom the peninsula was divided into three provinces and such methods of colonization and administration introduced that within the first century of the Christian era practically the whole country had been Romanized in custom and language.

On their southeastern frontier, about the headwaters of the Danube in the present south Germany, as well as in Gaul itself, the Kelts seem to have been on terms of close intimacy with the Greeks and their civilization from a very early period, perhaps due in part, as Hyde suggests, to their common hostility to Carthage, the one in Spain and the other in Sicily. At a later date Cæsar himself is authority for the statement that the Keltic Gauls had the Greek letters, and presumably with them some knowledge of Greek literature. The Greek colony of Massalia (Marseilles) was then already nearly six centuries old.

This intimacy seems to have been at its height in the time of Alexander the Great. On the young king's accession to the throne of Macedonia in 336 B.C. he took the precaution, before starting upon his Persian expedition, to secure his northern frontiers by negotiating an alliance with the Kelts, who, having made themselves masters of northern Italy, invaded Etruria and threatened Rome, had recently defeated the Illyrians, hereditary enemies of Macedon, and in all probability also had subjected a number of the German tribes. On his triumphant return to Babylon from his Indian campaign the Gauls were again among the nations which sent ambassadors to congratulate him.

In the confusion of kingdoms and events which followed the death of Alexander all this was changed, and a great wave of Keltic invasion, under another Brennus, rolled down the Danube, over Macedonia and Thessaly into Greece. Hyde surmises, with some probability, that this

eastward movement may have been due to pressure by the newly awakened German tribes in their rear. Repulsed at Delphi, a part of the Gauls retired as they had come, while another large division consisting of three whole tribes, on invitation of the king of Bithynia, crossed the Hellespont into Asia Minor, 278 B.C., and soon made themselves masters of a considerable territory in the north, making the inhabitants tributary, but without dispossessing the dwellers in the cities. Alternately at war or peace with all around, they were at last defeated in a pitched battle about the year 235 B.C. by Attalus, king of Pergamus, who compelled them to restrict themselves within the limits of the territory thenceforth called from them Galatia, about equivalent to the modern vilayet of Angora in Asiatic Turkey. The town dwellers, as has been stated, were of the earlier inhabitants, mostly of Greek origin and language. The government of the new state was modeled very much upon the Keltic clan system until toward the close of its independent existence, when, under Roman influence, one of the twelve joint rulers assumed the title of king. Forty-five years after their defeat by Attalus, the Roman general Manlius Vulso had attempted the conquest of the Galatians, but without decisive result, and it was not until the time of Augustus that Galatia finally became a province of the Roman empire, about 25 years before the beginning of the Christian era.

Up to this time at least the Kelts of Galatia preserved their ancestral language, and with it probably their ancient customs, in spite of Greek surrounding and intermarriage. Within a century thereafter, however, or by the time the apostle wrote his famous epistle, they seem to have been almost or entirely Hellenized. It is indeed often asserted on the authority of Saint Jerome, who resided in that part of Asia from 385 A.D. until his death in the year 420, that even in his time they still kept their language, the same which he had heard years before on the Rhine. Niebuhr suggests, however, with far more of probability, that those whom Jerome thus describes in Galatia were not the Keltic Gauls, but German exiles, more especially Goths, who had been transported into that region from the lower Danube by the emperor Theodosius in 386. The question is of minor importance. The essential fact is that a Keltic colony from the heart of Gaul successfully established and maintained itself for several centuries in western Asia until it disappeared by inevitable absorption.

Keltic France, Switzerland and Belgium may be treated as a unit. All were included under the Latin name of Gallia, modernized as Gaul. At least a thousand years before Christ Phenician traders and adventurers had coasted along its western shores, ascended the Rhone, and attempted settlement in the interior. Somewhere about 700 B.C. a Greek colony from Rhodes, settling at the mouth of the Rhone, gave name to the river (Rhodanus). A

century later another Greek colony established Massalia, now Marseilles. Thus even before the foundation of Rome Keltic Gaul had come under the influence of eastern culture and her products had found their way to the markets of Tyre and the Levant The relations with Greece, as has been already stated, were particularly intimate.

Of the three races occupying the soil of France at the dawn of history, the Ligurians are commonly assigned the lowest cultural rank, the Iberians (Aquitani) the second rank, while the Kelts admittedly stood first in culture, organization, warlike character and general intellectual quality. They probably reached their highest point about 600 B.C. when Ambigatus, from his chief city on the site of the modern Bourges, ruled over a confederacy of kindred tribes embracing probably half of modern France and sent out colonies into Italy, Spain and Germany. This period of solidarity and expansion may have lasted near three centuries, when began a period of decline due to a conflict of the social orders at home, chiefs, priests and people; the weakening of the central nucleus by swarming migration to remote distances; and the consequent inability to oppose successful resistance to the rising Roman power on the south and the increasing pressure of German invasion from beyond the Rhine.

Having destroyed Carthage and made themselves masters of all of Italy and Spain, the Romans found excuse and opportunity for making war upon the Ligurians in southern France and in 125 B.C. their country was made into a Roman province (Provincia, whence Provence), stretching from the Alps to the Pyrenees and northward along the Rhone to Lake Geneva. Colonies and garrisons were planted in the new territory and the way was open for the final struggle in Gaul.

The whirlwind invasion by the Cimbri and Teutones a few years later gave proof of the strength of German pressure in the rear, but left no permanent result. In the year 59 B.C. another German invasion from beyond the Rhine, by the Suevi, led to the appointment of Cæsar as proconsul of Gaul. In the ensuing nine years of constant and desperate war (58 B.C–50 B.C.), backed by all the power of Rome, he completed the conquest of France, Switzerland, a large part of Germany, Belgium, Holland and southern Britain, and added them all to the empire. The principal events of these wars have been recorded by Cæsar himself, and are so much a matter of common historical knowledge as to need no repetition here. It is sufficient to say that it was a struggle on a gigantic scale, in which wholesale massacre was the rule, and whole tribes were exterminated. Under Augustus, in 27 B.C. and later, the conquered territory was re-districted and brought under Roman administration, Roman towns were planted, the old Keltic religion proscribed, and, excepting in a few favored sections, everything of the old national order was outlawed. With Roman law came the Latin language, but up to the close of the second Christian cen-

tury the old Keltic speech was still commonly used at Lyons, according to the bishop Irenæus, and presumably also in other parts and to a later period—one writer says even into the 6th century—while in remote Brittany it persists to the present day.

The earlier inhabitants of Britain, as of most western Europe, are believed to have been non-Aryan, those along the southern coasts at least having probably been of Iberian stock. At what period the Keltic occupation began, presumably from across the Channel, is a matter of doubt, but it must have been several centuries before the Christian era, the weaker non-Aryan population being either driven out or assimilated.

The first Roman occupation was effected by Cæsar in 55 B.C., and again in the following year, with the result that the southeastern districts were brought into subjection, but the conquest was not followed up until a century later. At this period nearly the whole island was in possession of the Britons (Gaelic, *Breatannaigh*), a Keltic people represented by the modern Welsh. The exception was a district along the east coast of Scotland from the Firth of Forth northward, which was held by the Picts (Latin, *Picti*, Gaelic, *Cruitnigh*), a ruder people, of doubtful affinity, and by some regarded as of non-Aryan stock, but more commonly believed to have been another and distinct branch of the Kelts.

Under Vespasian, beginning in 50 A.D. and continued under Agricola to 84 A.D., the Romans made themselves masters of the whole territory northward to the firths of Forth and Clyde in Scotland, between which points they erected a chain of defenses as a barrier against the unconquered Picts and their allies the Gaelic Scots from Ireland. Constant reinforcement from Ireland strengthened the native resistance to such an extent that the Romans were ultimately pressed back almost to the present English border. The Scotic (Gaelic) invasion from the north of Ireland developed into a permanent Gaelic colonization of western Scotland, ending, after centuries of contest, in the complete absorption of the Picts by the Gaelic kingdom of the Scots under Kenneth MacAlpin in 843. The Picts had already been converted to Christianity by Irish missionaries in the fifth and sixth centuries.

The history of southern Britain from the time of Cæsar is so much a part of the history of England and Wales that it need not here be dwelt upon. The stubborn resistance of the native Cymric tribes having been crushed, England and Wales were divided into five Roman provinces, held by a standing garrison of three legions. Colonies, were planted, roads built, the Roman law and civilization introduced, and the native Druidic religion superseded, first by the Roman paganism, and later by the Roman Christianity. The Latin language, however, seems to have made but little impression upon the mass of the population. The withdrawal of the Roman garrisons in the early part of the fifth century, in order to protect the

nearer frontiers of the crumbling empire, gave increased opportunity to the heathen German invaders from across the sea. The Britons of the eastern lowlands were gradually pushed back into the mountains or took refuge with their Keltic kindred across the channel in the province thenceforth known as Bretagne or Brittany, where their race and language and Keltic characteristics still hold sway. The struggle begun against the Saxon was continued against the Norman until the older native Britons were concentrated into three districts—Cumbria or Strathclyde in the north, comprising Cumberland and the southwestern counties of Scotland; Wales in the centre, and the isolated peninsula of Cornwall in the extreme southwest. The Cumbrian kingdom was gradually absorbed by Scotland and England, but retained its separate racial identity until 1305, when the native laws were formally declared abolished. Cornwall, although entirely hemmed in by the sea and the Saxon, maintained itself up nearly to the Norman period, and still preserved its ancient language until the close of the 18th century. Wales, after centuries of gallant defense, was finally brought under Norman dominion by Edward I. in 1285, but its two million Keltic inhabitants still hold stoutly to their national language and characteristics.

The traditional earliest inhabitants of Ireland—Fomorian, Nemedian, Firbolg, Tuatha-De-Danann—were in part, if not all, non-Keltic. The Firbolg, who continued into the historic period, were a dark-haired race, possibly Iberian. The blond fair-haired Tuatha-De-Danann are now commonly believed to have been a myth. The Gaelic colonization was traditionally effected under the three sons and the nephew of Miledh or Milesius, coming in a fleet from Spain, some centuries, or even a thousand years, before the Christian era. Hyde, however, our best modern authority, is inclined to bring them from Gaul (France), while favoring the earlier period. Whatever maybe the truth concerning the Tuatha-De-Danann, whom they are said to have overmastered, it is certain that they subjected the darker Firbolg, restricting them to districts in the west, whence they gradually disappeared by absorption. There are hints also of local invasion and temporary colonization by Britons or Picts from the neighboring island about the beginning of the historic period. In the third century of our era a Gaelic colony from the north of Ireland, the Scots, established itself in Argyleshire, Scotland, by dispossessing the Picts. Constant reinforcements extended their boundaries, particularly under Fergus in 502, until about the year 844 the whole northern portion was erected into the Gaelic kingdom of Scotland under Kenneth MacAlpin. Ireland may have come in some measure under Phenician influence, but was never invaded or subjected by the Roman, and consequently, alone among the western nations, pursued its own distinct development, except as interrupted by the Danes, up to the coming of the Normans in 1169.

Christianity, introduced in the 4th century, became the national religion under Patrick's apostleship in the next century. The native Brehon law code held its own over most of the island until the 17th century, and the native Gaelic language, although for centuries proscribed and penalized to the verge of extinction, still persists over large areas and lately shows signs of vigorous new life under the fostering care of the Gaelic League.

The Keltic languages constitute a well-marked group of the Aryan stock. From the great number of Keltic tribes at the beginning of the historic period and the wide extent and diversified character of their territory, it is probable that the group formerly comprised several languages in many dialects. These are now reduced to two languages, Gaelic, in the dialects of Ireland, north Scotland, and the Isle of Man; and Cymric or Welsh, in the dialects of Wales and Brittany The dialect of northern Gaul at least was very near to the Cymric, but recent investigations give evidence of a former dialect in central France more nearly connected with the Gaelic. Of the two, Hyde considers the Gaelic, which closely resembles Latin in its roots, to be the more ancient. Its distinguishing phonetic peculiarities are a dislike for the initial or middle *P* as found in the related Aryan roots, together with a system of consonantic change known as aspiration. Welsh, on the contrary, retains the *P* sound, while adhering to the same system of aspiration, made more complex in appearance by the Welsh system of phonetic spelling. Irish Gaelic alone has its distinctive alphabet, a modification of the early Latin forms introduced with Christianity. An earlier system, about which there has been much dispute, and which seems to have been more or less general throughout the main Keltic area, was known as the Ogam, (q.v.). The manuscript literary material of ancient Ireland probably exceeds that of any other nation.

The ancient Keltic civilization was far superior to that of the Germans, and but little inferior to that of the Romans, but in its governmental aspect was everywhere strongly democratic and tribal, rather than national, and therefore lacked the centralizing tendency upon which kingdoms and empires are founded. Idealistic in temperament and artistic in execution, the Kelt of Cæsar's time, as of to-day, was distinguished for his bravery and fondness of adventure, his deep religious spirit, his poetic imagination, and his love of music and of nature. His warm temperament and impatience of restraint, with his voluntary preference of the spiritual for the mercenary have placed him at a disadvantage in competition with races of more even and calculating disposition, but the very same qualities have enabled him to give to the world from the early Christian centuries to the present an exceptionally large proportion of its most illustrious missionaries, teachers and leaders of opinion. The present number of the Keltic race at home and abroad may be roughly calculated at 20,000,000.

CEMENT, n. *sĕm′ĕnt* or *sē′mĕnt′* [F. *ciment*, cement—from L. *cæmen′tum*, chips of stone, cement—from L. *cædĕrĕ*, to cut]: the substance that unites two bodies together, or the parts of a broken thing; bond of union; mortar; a term denoting the hard external tissue of the lower part of the tooth, beginning where the tooth enters the gum, and the enamel terminates: V. *sĕ-mĕnt′*, to unite by a glutinous substance; to unite firmly and closely; to cohere. CEMENT′ING, imp. CEMENT′ED, pp. CEMEN′TER, n. one who. CEMENTATION, n. *sĕm′ĕn-tā′shŭn*, the act of cementing; a process by which iron is converted into *Blistered steel* (q.v.) CEMENTATORY, a *sĕ-mĕn′tā-tėr-ĭ*, or CEMENTITIOUS, a. *sĕm′ĕn-tĭsh′ŭs*, having the quality of cementing. Roman CEMENT: see under ROMAN. PORTLAND CEMENT: see under PORTLAND.

CEMENT: substance used to make the surfaces of solid bodies adhere to one another; it is applied in a liquid or viscous state, and hardens after the surfaces are brought together; hence glue, lime, asphaltum, mucilage, and solder are cements. By far the most important class are the hydraulic cements, mixtures of lime, silica and alumina, that have the property when mixed with water to a paste of cohering or setting and finally becoming stone hard, even under water. The setting is probably due to the same general chemical reactions in all hydraulic cements, the lime uniting with the alumina and silica to form hydrous calcium silicates and aluminates. The quickness with which these reactions take place varies, the composition of the original materials and the differences in the methods of manufacture being the controlling factor. There are four kinds of hydraulic cement: (1) Hydraulic lime made from a limestone containing a small proportion of clay (8 to 10%) by burning at a low temperature and slaking the burned rock with water; (2) Hydraulic or natural-rock cement made from a limestone containing a relatively large proportion of clay, by burning at a low heat and grinding the product to powder; (3) Portland cement made from an artificial mixture of carbonate of lime (either chalk, ground limestone, or marl), with a certain proportion of clay, burning at a white heat, and grinding the clinker to powder; (4) Puzzuolana or slag cement made by mixing finely-ground scoria (volcanic ash) or some kinds of blast furnace slag with a small proportion of slaked lime.

The manufacture of hydraulic lime is carried on to a considerable extent in France, but has never been established in the U. S. The manufacture of natural rock cement and Portland cement are, however, important industries in this country. The material used for natural-rock cement in the U. S. is limestone or marl often containing over 23% of clay; the limestone generally contains carbonate of magnesium. The cement rock is quarried, broken, and burnt in continuous kilns; the burnt rock is then ground, several types of mills being employed, and when mixed with water makes a cement that sets in a few minutes and

hardens gradually. It is cheap and when mixed with one part of sand is used for mortar or concrete and for cistern and reservoir linings. The chief center of the industry in in the U. S. is the Rosendale district, Ulster Co., N. Y. Portland cement was first made in England in 1824; and in the U. S. in 1878. Since 1894 the growth of the industry in the U. S. has been remarkable. In making this cement, two processes are used, the wet and the dry. In the dry process, shale and limestone are used; the stone is broken is large gyratory crushers, thoroughly dried, ground in the mill, and burnt to a clinker in cylindrical rotary kilns. The clinker is cooled and then ground to a fine powder, which is packed in barrels or sacks for the market. In the wet process, clay and marl are used, and are ground together when wet. The rest of the process is essentially the same as the dry process. The original slag cement was made by the Romans, who used for this purpose volcanic scoria or 'pozzuolana.' Within recent years it has been found that certain kinds of furnace slag, especially those from the manufacture of steel by the basic process, can give hydraulic properties to lime. The slag is granulated by contact with water and then dried; the lime is burnt, slaked, and mixed with slag by mechanical mixers, and the mixture finely ground. The manufacture of slag cement was not begun in the U. S. till 1895, and has not yet attained the importance that it has in Germany.

Of other forms of cement for special purposes, the following may be noted:

For water-tight joints, such as slate cisterns, aquaria, etc., and for uniting broken pieces of stone, and filling up metallic joints—take equal parts of red and white lead, and work them into a stiff paste with boiled linseed oil. When used for metal joints it should be made rather thin, and both pieces of metal, as well as the washer, well smeared with it. This cement hardens slowly, but becomes ultimately of almost flinty hardness. Cement composed of ox-blood thickened with finely powdered quicklime, is used by coppersmiths, for securing the edges of rivets of copper boilers, and for steam-joints. Another cement for steam-joints is made with borings or turnings of cast-iron mixed with a little sal ammoniac and flour of sulphur. It should be stirred up with a small quantity of water, just sufficient to moisten it, then rammed into the joint, which should be bolted up as tightly as possible; 5 lbs. of iron borings to 2 oz. of sal ammoniac and 1 oz. of sulphur, are the proportions most generally recommended.

An electrical cement—so called from its use in uniting the cylinders of electrical machines to their axes, and for a variety of similar purposes—is composed of 5 lbs. rosin, 1 lb. each of bees-wax and red ochre, and 4 oz. of plaster of Paris: this is Singer's formula. A cheaper cement of this kind may be made from 14 parts rosin, 2 red ochre, and 1 plaster of Paris. These should be melted together till the frothing ceases and the composition runs smoothly. This is applicable to a variety of purposes, where a cheap and

tolerably adhesive cement is required. For mending earthenware and china, etc., a variety of cements are recommended. For ornamental glass or china, not subjected to heat or rough usage, Canada balsam that has evaporated until rather hard, is a very useful cement; from its transparency it makes an almost invisible joint. The surfaces should be slightly warmed, and the balsam brushed over them, after which they should be kept pressed together for a short time. Thick copal or mastic varnish may be used in the same manner. Gum shellac, dissolved in spirits of wine in sufficient quantity to form a treacly liquid, forms a stronger cement than the above, but its color is objectionable for some purposes. The shellac may be dissolved in naphtha, but is not equal to that in spirits of wine. *Liquid glue* is usually prepared in this manner, another kind is made of a mixture of the solutions of shellac and India rubber. The *marine glue*, a mixture of shellac and India rubber, is a remarkable cement, and when applied, as the last, with the precautions just alluded to, is so strong that glass or china cemented with it, and then dashed on the ground, or otherwise broken again, will give way in any part rather than that cemented. For the mode of preparing it, see GLUE.

*Cutlers' Cement*, used for fixing knives and forks in handles, is made of equal weights of rosin and brick-dust melted together; or, for a superior quality, 4 parts of rosin, 1 of bees-wax, and 1 of brick-dust. *Mahogany Cement*, used for stopping cracks and holes in mahogany, may be prepared by melting 4 parts of bees-wax with 1 of Indian red, and as much yellow ochre as is found requisite to give the color. If shellac be substituted for the bees-wax, and less red used, a much harder cement is made. For *French Cement*, *Rice Glue*, and other light cements for joining paper articles and artificial flowers, see GLUE: PASTE.

CEMETERY, n. *sĕm′ĕ-tĕr-ĭ*] Gr. *koimētērĭŏn*, a sleeping place—from *koimāō*, I lull to sleep: L. *cœmĕtērĭum*]: a place for the burial of the dead; of late, specially, an extensive ornamental burial-ground, such as have become common since the practice of burying within and around churches was gradually abandoned (see BURIAL). The fine burial-grounds of the Turks, extending over large tracts adorned by cedars and other trees, may have suggested the plan to Europeans. It was first exemplified on a great scale in Paris, in which, as the largest walled town in Europe, the disposal of the dead was long a matter of extreme anxiety and difficulty. There was at first a natural feeling of regret at the prospect of deserting places of deposit for the dead so hallowed by ancient use and recent associations as the church and the churchyard. But the new places of interment began to develop humanizing and elevating influences in beautiful trees and flowers, natural scenery, and works of monumental art. One of the oldest established and most celebrated of cemeteries is that of Père la Chaise (q.v.), near Paris, the arrangements of which

have been generally followed in the cemeteries of Europe and America.

CENANTHY, n. *sĕn-ăn'thĭ* [Gr. *kĕnos*, void, empty; *anthos*, a flower]: the absence of stamens and pistils in flowers.

CENATORY, a. *sĕn'a-to-rĭ* [L. *cœnatorius*—from *cœna*, supper]: relating to or fit for supper.

CENCI, *chĕn'che*, BEATRICE, called the 'beautiful parricide': lived near the end of the 16th c.; dau. of Francesco Cenci, a wealthy Roman nobleman. She has long been the central figure of a tragic tale now discredited in many of its most impressive features. According to Muratori (*Annales*, lib. x.), Francesco was twice married, Beatrice being his daughter by the first wife. After his second marriage he treated the children of his first wife in a revolting manner, and was even accused of hiring bandits to murder two of his sons on their return from Spain. The beauty of Beatrice inspired him with the horrible and incestuous desire to possess her person; with mingled lust and hatred he persecuted her from day to day, until circumstances enabled him to consummate his brutality. The unfortunate girl besought the help of her relatives, and of Pope Clement VII. (Aldobrandini), but did not receive it; whereupon, in company with her step-mother, and her brother, Giacomo, she planned and executed the murder of her unnatural parent. The crime was discovered, and both she and Giacomo were put to the torture; Giacomo confessed, but Beatrice persisted in the declaration that she was innocent. All, however, were condemned, and put to death, 1599, Aug., in spite of efforts in their behalf. Such is Muratori's narrative. Others allege that Beatrice was the innocent victim of an infernal plot. The results of Bertolotti's investigations (*Francesco Cenci e la sua Famiglia*, 1877), based on original documents and contemporary notices, go far to deprive the story of the Cenci tragedy of the romantic elements on which Shelley's powerful tragedy mainly turns. Francesco, it would appear, was profligate, but no monster; Beatrice at the time she murdered her father, was not 16 but 21 years of age, was far from beautiful, and probably had already a tarnished moral reputation. And Bertolotti is further convinced that the sweet and mournful countenance which forms one of the treasures of the Barberini palace in Rome, is not only not the portrait of Beatrice, but was not even painted by Guido, to whom it has long been unhesitatingly attributed.

CENEDA, *cha-nā'dâ*, now officially called VITTORIO: city of n. Italy, province of Treviso, 36 m. n. of Venice. It is an episcopal see, but is now a decayed city. Pop. 11,000.

CENIS, MONT, *mōng se-nē'*, or MONTE CENISIO, *mōn'-tā chā-nē'zĭ-o:* mountain pass of the Alps, between Savoy and Piedmont, forming part of the water-shed between

the valleys of the Doire and the Arc. The culminating point of the pass is 6,775 ft. above the sea. Schist, limestone, and gypsum, in alternate beds, compose the strata of the mountain, the vegetation of which is rich in the rarer kinds of Alpine plants. Over the pass a road was constructed (1803-10) by the Chevalier Fabbroni, under Napoleon's orders, at an expense of $1,500,000. This is the safest, and most frequented road across the Alps. Near the pass, a railway tunnel, 7½ m. long, was finished 1870: see TUNNEL.

CENOBIARCH, n. *sē-nō′bĭ-ârk* [L. *cœnobĭŭm*, a convent: Gr. *archē*, government]: the head or chief of a monastery.

CENOBITE, n. *sē′nō-bīt* [mid. L. *cœnobīta*, a member of a resident fraternity—from *cœnōbĭŭm*, a convent—from Gr. *koinos*, common; *bios*, life]: one of a religious order who lives in a convent or monastery with others, and not alone, like an *anchoret* or *hermit*. CENOBITIC, a. *sē′nō-bĭt′ĭk*, and CE′NOBIT′ICAL, a. *-ĭ-kăl*, living in community as a monk: see MONACHISM.

CENOGENESIS, *sĕn′o-jĕn′e-sĭs*. While many animals during postembryonic growth pass through a series of stages which are similar to the ancestral forms of such types (palingenesis), in certain species development is direct. The different stages of growth or metamorphosis are crowded back to the embryo stage, or abbreviated, and the animals hatch or are born in the shape of their parents. This is called cenogenesis. Thus certain frogs, as a tree-toad of Guadeloupe, W. I., where there are no marshes, do not pass through a tadpole stage, but hatch without tails and with legs, and otherwise resemble their parents. The same is the case with certain shrimps and crabs, and is partly the case with the lobster. In all such instances the direct development is apparently due to a difference in the environment, or other conditions of life, especially in certain crustacea, to a change from salt to fresh water.

CENOMY′CE: see REINDEER MOSS.

CENOTAPH, n. *sĕn′ō-tăf* [F. *cénotaphe*—from mid L. *cenotaphĭŭm*—from Gr. *kenotaphĭŭm*, an empty tomb—from Gr. *kĕnos*, empty; *tăphos*, a tomb]: a tomb-shaped monument in honor of one who is buried elsewhere. Such monuments were originally erected for those whose bones could not be found, e. g., for those who had perished at sea. Latterly, the name came to be applied to tombs built by a man during his lifetime, for himself and his family.

CENOZOIC *sē-nō-zō′ik* ERA, the last of the five great divisions commonly used in classifying geological time, and therefore including the present. As it is the last, its records are much more complete than those of the Mesozoic, but while more complete they are, perhaps, more perplexing. Of the older eras—as, for instance, the Palæozoic—much of the record left in the rocks has been obliterated, and thus only the traces of the greater changes

in the distribution of land or water and of variations of climate have come down to us. Thus, while much is lost, the broader grouping of facts is easier. In the Cenozoic we have such a wealth of detail, such a great mass of evidence to sift and correlate, that geologists differ greatly as to how the record of the rocks shall be translated.

Generally speaking, the rocks of the Cenozoic Era are less compacted than those of the Mesozoic, being very often beds of loose sand or clay. They usually lie horizontal, though sometimes upturned in a great mountain range. Any particular series is seldom of wide extent, and different series tell widely different stories of climatic conditions. Thus, probably no series in the Cenezoic in North America is comparable with the coal-bearing formations of the Cretaceous.

As to the climate of the Cenezoic, it was at first remarkably mild and even, Spitzbergen and Greenland having as mild a climate as that of Ohio to-day. Gradually the climate became colder, resulting in the great continental glacier of the Ice Age. At a comparatively very recent date these glaciers receded, and the climate of the earth became substantially what it is to-day.

Cenozoic life is, on the whole, well differentiated from Mesozoic, particularly by the great development of mammals and, probably well along in its last half (reckoning by actual time), by the advent of man. As mammals have developed, so reptiles have declined, and to-day only snakes, crocodiles, lizards, and turtles represent the class; the great ichthyosaurs, plesiosaurs, dinosaurs, and pterosaurs were passing away by the end of the Cretaceous. In fact, as the Mesozoic was the era of reptiles, so is the Cenozoic the era of mammals. Among invertebrates many curious Mesozoic types have disappeared, but of the genera in existence early in the Cenozoic most still exist. This also is true of Cenozoic plant life.

As has been noted, geologists differ in their divisions and subdivisions of Cenozoic time. American geologists generally make two great divisions, Tertiary and Quaternary.

Consult: Dana, *Manual of Geology;* Geikie, *Text-book of Geology;* Le Conte *Elements of Geology.* See also GEOLOGY; GLACIAL PERIOD; TERTIARY; PALEONTOLOGY.

CENSE, v. *sĕns* [F. *encenser*, to perfume: contr. from *incense*, which see]: to perfume with burning odoriferous substances. CEN'SER, n. *-sẽr*, a vase or pan in which incense is burned. CEN'SING, imp. CENSED, pp. *sĕnst.*

CENSER, *sĕn'ser:* vase, or other sacred vessel, used for burning perfumes: see INCENSE. Censers were much used in the Hebrew service of the temple, but their form is not accurately ascertained, and it is probable that they varied in this respect, according to occasion. The censer, called also a *thurible* [Lat. *thuribulum*, from *thus*, frankincense], is used in the Rom. Cath. Church at mass, vespers, and other offices. It is suspended by chains, which

are held in the hand, and is tossed in the air, so as to throw the smoke of the incense in all directions. It varies very much in form, from a simple vase, or chafing dish, covered by a perforated dome, to large ornamental structures.

CENSOR, n. *sĕn′sŏr* [L. *censor*, a Roman magistrate, a censor, a critic—from *censērĕ*, to give an opinion]: an officer in anc. Rome who registered the property of persons, imposed taxes, and punished immorality; in some countries, a person who inspects all MSS. before they are permitted to be printed or published; one given to fault-finding. CENSO′RIOUS, a. *-sō′rĭ-ŭs*, or CENSO′RIAL, a. *-rĭ-ăl*, given to blame or to condemn; severe in making remarks on the conduct or writings of others. CENSO′RIOUSLY, ad. *-lĭ*. CENSO′RIOUSNESS, n. disposition to find fault. CEN′SORSHIP, n. the office or dignity of a censor; the power exercised in some countries of superintending and revising general literature before publication, particularly periodical and political publications. SYN. of 'censorious': captious; carping; cavilling; condemnatory; severe.

CENSORS, *sĕn′sorz:* name of two Roman officers of state. The office was established by Servius Tullius, fifth king of Rome. After the expulsion of the kings it was held by the consuls, special magistrates not being appointed till B.C. 443. It continued to be filled by patricians till B.C. 351, when C. Marcius Rutilus, a plebeian, was elected. Twelve years later it was enacted that one of the censors (there were always two) must be a plebeian. In B.C. 131, both censors for the first time were plebeians. The censors were elected in the *comitia centuriata* presided over by a consul. The term of office at first lasted five years, but was shortly afterward limited to 18 months. The censorship was regarded as the highest dignity in the state, except the dictatorship. It was a sacred and irresponsible magistracy, whose powers were vast and undefined, and whose decisions were received with solemn reverence. The duties of the censor were threefold. 1. The taking of the census, or register of the citizens and of their property. 2. The *regimen morum* (regulation of morals). 3. The administration of the finances of the state. The taking of the census [L. *censeo*, to value, to take an account of] was originally their sole function (hence their name), and was held in the Campus Martius, in a building called *Villa Publica*. The *regimen morum* was the most dreaded and absolute of their powers. It grew naturally out of the exercise of the previous duty, which compelled them to exclude unworthy persons from the lists of citizens. Gradually the superintendence of the censors extended from the public to the private life of citizens. They could inflict disgrace (*ignominia*) on any one whose conduct did not square with their notions of rectitude or duty. For instance, if a man neglected the cultivation of his fields, or carried on a disreputable trade, or refused to marry, or treated his family either too kindly or too harshly, or was extrav-

agant, or guilty of bribery, cowardice, etc., he might be degraded according to his rank, or otherwise punished. *The administration of the finances of the state* included the regulation of the *tributum*, or property-tax; of the *vectigalia*, such as the tithes paid for the public lands, salt-works, mines, customs, etc., which were usually leased out to speculators for five years; the preparation of the state budget, etc. See Rovers, *De Censorum apud Romanos Auctoritate et Existimatione* (Utrecht, 1825).

CENSORSHIP OF HEBREW BOOKS: Regulation imposed by the church on the character of Hebrew MSS. or books, usually the revision, expurgation, and purification of the text by officials appointed for that purpose. The procedure of these 'experts' of the Inquisition, in Italy, for example, was to demand the Hebrew books from their owners and subject them to rigid examination. Books under the ban were destroyed and their possessors punished. Books merely objectionable were expurgated and restored, duly certificated, the Jews paying cost of the censorship. All passages were condemned which, in the opinion of the experts, conflicted with Christian doctrines or contained blasphemies and heresies, together with a long list of interdicted phrases and views, favorable to the Jews or Jewish martyrs, or any criticisms of non-Jews or non-Jewish matters. Thus, references to 'Rome' were to be omitted, although the church was not in existence when the word was written. Ink was plentifully used to make illegible objectionable words and phrases; in course of time the original text has often been revealed by the fading ink. Frequently new words were substituted for the word under criticism, and occasional emendations were made, probably by the Jews themselves. Sometimes a whole folio containing an offending passage was torn out of a book. The censor's certificate, in Latin, Italian, or Hebrew, was attached to the last page of the book or the title-page. The work was often done under the auspices of the Inquisition and was connected with domiciliary visits, books being often subjected to repeated revision, as late as 1753-4 in the Papal States. The history of censorship records many amusing blunders, proving the ignorance of the experts. The amount of work undertaken may be gathered from the fact that in 1612 one censor expurgated 29,011 works. Copies of the Talmud and prayer-book were particularly the objects of expurgation, public burnings of Hebrew books being the custom in Rome and elsewhere. The Papal court was alternately rigorous and lenient in its censorship in the 16th and 17th centuries. In the 18th century an attempt was made by Costanzi to form an Index Expurgatorious for the Hebrew books, but the atmosphere was changing and the era of repression was over.

The persistence of the spirit of censorship of Hebrew books is shown in Russia where they are still subjected to close scrutiny, special experts being appointed for that

purpose. Confiscations, expurgations, and obliterations occur from time to time as steadily as about a century ago when censorship began. But this procedure is not exceptional in Russia. See W. Popper, *Censorship of Hebrew Books* (New York 1899).

CEN'SORSHIP OF THE PRESS: term generally applied to the arrangements for regulating what may be printed, in countries where the press is not free. The simplest form of censorship is when a public officer—the censor or licenser, as he is sometimes called—reads over the MS. to be printed. Thence it is common in old books to see the word *imprimatur*—let it be printed, followed by one or more signatures. Though it has its name from an analogy with the functions of the Roman censor, the censorship did not come into operation until the invention of printing. It was common to all European countries, Great Britain included. The censorship was established by act of parliament in 1662, 13 Char. II., c. 33: 'An act for preventing the frequent abuses in printing seditious, treasonable, and unlicensed books and pamphlets, and for regulating of printing and printing-presses.' This was a temporary act, renewed from time to time; and its renewal was refused in 1693, owing to a quarrel between the house of commons and the licenser. Since that time there has been, generally speaking, no restriction in Britain on what any man may publish; and a publisher is merely responsible to the law (as in the United States) if in his publication he should commit any public or private wrong. See LIBEL, LAW OF: also PRESS, FREEDOM OF THE: BOOK TRADE: COPYRIGHT.

CENSUAL, a. *sĕn'shŭ-al:* pertaining to a census.

CENSURE, n. *sĕn'shur* [F. *censure*—from L. *censūră*, severe judgment: It. *censura*]: severe judgment; the act of blaming or finding fault; reproof; an ecclesiastical sentence: V. to find fault with; to blame; to condemn as wrong. CEN'SURING, imp. CEN'SURED, pp. *-shûrd.* CEN'SURER, n. one who. CEN'SURABLE, a. *-ă-bl,* worthy of blame. CEN'SURABLY, ad. *-blĭ.* CEN'SURABLENESS, n. the quality of being censurable; blameableness.—SYN. of 'censure, v.': to blame; condemn; reprove; reproach; upbraid; reprimand; rebuke; chide; animadvert; disapprove; judge;—of 'censure, n.': reproof; blame; condemnation; disapproval; disapprobation; reprehension; reprimand; abuse; dispraise.

CENSUS, n. *sĕn'sŭs* [L. *census,* a registering and rating of citizens: It. *censo*; F. *cens*]: an authoritative and usually periodical enumeration of the inhabitants of a state or country. CEN'SUAL, a. *-shu-ăl,* of or relating to a census.—Though the Roman censors had to enumerate the people, it was only for immediate purposes of taxation, so that no account of the results of such enumeration has been preserved. The idea of ascertaining the numbers of the people, and the proportions in which they are divided

according to sex, age, profession, rank, and the like, as statistical information, is of late origin.

The modern census, as a statistical review for its own sake, has a treble origin, in Sweden, England, and the United States. In 1686 the Swedish parish clergy were required to keep a record of births, marriages, and deaths, accessions and removals of inhabitants, unusual happenings, etc. Of course registration, which is a record of changes, is not a census, which is a statement of condition at a certain time; but with a given basis it can be turned into one. By request of the Swedish Academy of Sciences, in 1746, the clergy were directed to compile statistics of population, etc., for a quarter-century past; but these were kept rigidly confidential till 1762. At their publication Dr. Richard Price, the founder of scientific life-insurance calculation, based his first insurance tables on them. At first annual, then triennial, since 1775 they have been published once in five years. Meantime, in England, the London bills of mortality, first begun after the plague of 1592, had been recorded weekly since 1603, the year of James I.'s accession; and in the last half of the 17th century Sir Wm. Petty, the noted political economist, used them as a basis for very valuable and stimulating works on the extent and growth of population, human fecundity, effects of social and political causes, etc. Others took up the subject and made computations. In 1791 Sir John Sinclair undertook the most herculean statistical task ever attempted, perhaps, by a single man—to compile a census of the population, agriculture, trade, and industry of the entire kingdom, by inquiries sent to the clergy of the Established Church. He sent out schedules of 160 interrogatories, received over 900 replies, and in 1798 published 21 volumes of results. His work, and his exhortations made weighty by his work, induced Parliament in 1800 to establish a census office; the first census was taken the next spring, and decennial censuses have been maintained ever since. That of 1851, like the American of 1850, was a long step in advance. The Russian censuses had begun earlier, but on the most ancient model, purely for military purposes, and therefore with no count of females. There were a few partial censuses from 1700 on. In 1718 Peter the Great ordered all landed proprietors to give in an account of their slaves; and the same year organized a body of canvassers to visit all the provinces and make returns to him of peasants, mechanics, domestics, and people without occupation. In 1722 a ukase ordered a census taken every 20 years thereafter, and it was observed till 1782, another taking place in 1796. In 1802 a central bureau was organized, and a census taken; and they have been taken in 1812, 1815, and 1834, decennially 1850-80, then in 1886 and 1897. France began taking them after the Revolution; Prussia in 1805; Austria, which had made rough counts for military conscription, organized a bureau in 1828; Belgium estab-

lished one immediately after winning her independence in 1833, and it has been perfected by the genius of Quetelet and other eminent statisticians, and furnished most valuable contributions to science. Our own census was entirely independent of all these in origin.

*The United States Census.*—It may be mentioned here, as germane to this subject, that when Gov. Hunter of New York in 1712 attempted to take a census, biblical prejudice compelled him to leave it unfinished; and that when the New Jersey government a few years later wished to do so, it did not dare begin. An accurate determination, however, became vital early in the independent life of the country. To apportion equally the burdens of the Revolutionary war, the Congress of the Confederation agreed to defray the charges out of a common treasury, to be supplied by the States in proportion to the value of all the land in each; and to requisition the quotas of land forces according to the quotas of white inhabitants. Under the Constitution of 1787 the question of number became exigent, as direct taxes and representatives in Congress were apportioned according to the number of free inhabitants in each state (including bound servants and excluding Indians not taxed) and three fifths of all others. Censuses, therefore, became part of the ordinary running machinery of the government; and the first one was taken in 1790. Since that time a census has been taken every 10 years and in 1905 a decennial census of manufactures was taken. Some idea of the great difference of scope between the census of 1790 and of 1890 and 1900 may be seen from the following statements. In the former nine months were allowed for the work, but the time was extended the next year, as regularly for many a decade thereafter. The scope of inquiries simply included families: the name of the head alone being set down, with the number of others included, and slaves as a property item, the sex and color of free persons, the number of free white males of 16 and upward, number of free white females, and of all other free persons. The enumeration was committed to the marshals of the judicial districts of the United States (16 in all), who were to employ assistants as needed. No form of schedule was provided, each enumerator using any sheets or blank book he chose. This continued till 1830. There was no central bureau to receive or supervise returns, which were put together by the marshals and transmitted to the president. A penalty of $200 was imposed for false returns or delay beyond a certain time; and the same on individuals for giving false information or refusing any. The returns in the North were given by counties, cities, and towns; in the South by counties only. Two copies of the enumeration of each district were to be posted in some public place therein. The cost of this census was $44,377.28. The result, as usual, pricked many local bubbles; and as the country was not used to this, there was not only general disappointment but distrust of the

census, and United States officials carefully explained to foreigners that the returns were very defective. This is not now believed. The census of 1890 covered the following subjects: Population; Statistics of Manufactures; Statistics of Agriculture; Transportation; Cotton Production; Valuation, Taxation, and Public Indebtedness; Newspapers and Periodicals; Alaska; Fur Seal Islands; Shipbuilding; Forest Trees of North America; Special Reports on Petroleum, Coke, and Building Stones; Mortality and Vital Statistics; Precious Metals; Mining Laws; Mining Industries (exclusive of Precious Metals); Water Power; Social Statistics of Cities; Statistics of Wages, Necessaries of Life, Trades Societies, Strikes, and Lockouts; All surviving soldiers, sailors, and marines of the Civil War, and their widows; Classification of colored persons according to amount of white blood, from full-blooded negroes up to octoroons; Indebtedness of private corporations and individuals; All Indians in tribes, with Indian and English names of each, age, occupation, and whether paying taxes or not; Unincorporated express companies. In the census of 1890 an attempt was made to collect statistics of chronic disease; but the inquiries were too delicate to intrust to local residents or expect people to communicate to such, and the statistics gathered were of no value, besides exciting much public ill-will. Special agents were employed for 1,042 manufacturing centers, in place of the 279 in 1880. Special attention was paid to nativity, to fecundity of native and foreign-born mothers, the expectation of life of children of native and foreign-born parents, naturalization, and ability to read and speak English. Prior schedules were extensively used. Electric tabulation was employed, not alone greatly increasing both speed and accuracy, but enabling various statistical compilations to be made which were otherwise impracticable. The tenth census filled 25 volumes, and cost $11,547,127.13. There were 10 chiefs of divisions, 175 supervisors, and 47,975 enumerators.

For the 12th census, that of 1900, preparations had been mooted before the 10th was well under way; and the question of a permanent census bureau, strongly urged over half a century since by the able statistician De Bow, was brought up, and its merits set forth in a valuable and exhaustive report by Supt. Porter. After much debate, an act of 1899, March 3, established such an office in the Department of the Interior. By this act the superintendent of the census is entitled the director of the census. The President, who appoints him, must also appoint an assistant director, who must be an expert statistician; and the director is to appoint five known and tried statisticians as chiefs of divisions, a geographer, a chief clerk, and a disbursing clerk. The first director under this bill was William R. Merriam; assistant director, Frederick H. Wines; chiefs of divisions, William C. Hunt, population; William A. King, vital statistics; S. N. D. North, manu-

factures; Le Grand Powers, agriculture; Walter F. Wilcox, methods and results; geographer, Henry Gannett. The law creating this bureau, however, greatly limited its scope. The collection of 'side' statistics was thought to retard the preparation and publication of those assumed to be alone of general interest, and the inquiries were restricted to the four heads of population, mortality, agriculture, and manufactures.

This limitation would not be regrettable—the census organization not being the ideal one for many classes of statistical inquiries—but that Congress is not likely to appoint other boards or commissions to do the work thus dropped, as is done in foreign countries. There the census relates only to population, and and other inquiries are made through other sources, or by copying registration returns. Congress, however, is doubtful of its power to compel answers except through the census acts.

*State Censuses.*—A number of States have Constitutional requirements that a State census shall be taken once in 5 or in 10 years, or between two national censuses; but only a few pay any attention to the matter or attain results of any value. Massachusetts, Rhode Island, New York, and Michigan thus far are the only States which have done good work in this line. The Massachusetts censuses from 1855 on, and the Michigan of 1874 and 1884, are notably good. In 1879, March 3, an act of Congress provided that any State which will take an interdecennial census in all respects equal to that of the United States, and file a copy with the Secretary of the interior, shall receive from the national government 50 per cent. of the amount paid to supervisors and enumerators, plus 50 per cent. of the gain per cent. in population between the two last preceding national censuses. Even this lure, however, has not thus far increased the interest of the States in their statistics.

CENT, n. *sent* [L. *centum*, a hundred, of which *cent* is an abbreviation: It. *cento*: F. *cent*]: a hundred; in the United States, a copper coin, in value the hundredth part of a dollar, equal to about a halfpenny sterling; they are legal tender to the amount of 25 cents. The Dutch cent is a copper coin, in value the hundredth part of a guilder. PER CENT [L. *per*, by, by means of]: by the hundred; a certain rate for each hundred of anything. PERCENTAGE, n. *-tāj*, so much for each hundred. CENT PER CENT, 100 by means of 100; $100 for each $100, as profit or interest; a sum of money yielding an equal sum as profit.

CENT: a United States coin and money of account, the 1-100 of a dollar. The convenience of decimal computation has caused in various countries the division of the monetary unit into hundredths, with names derived from Latin *centum* or its adjectives; as the French franc into centimes, the Dutch guilder into cents, the Italian

lira into centesimos, the Spanish-American dollar into centavos, etc. Jefferson regularly used 'cent' to mean the hundredth of any unit of mensuration; but in its first suggestion for our coinage it meant 100. The inconvenience of the English system being felt, Congress in 1781 instructed Robert Morris to devise a system of national coinage; and he proposed a unit of $\frac{1}{4}$ grain silver (or 1-1440 of a Spanish dollar, familiar in the colonies), of which 100 were to make a cent (about 7c. of ours), 500 a quint (34.7c.) and 10,000 a mark ($6.94). Jefferson proposed instead the dollar as the unit, the smallest coin to be of copper and 1-200 of it (that is, the old English farthing, our half-cent); this was adopted 1785, July 6. But on 1786, Aug. 8, an act was passed, still modeled by Jefferson, to coin a cent, of which 100 were to weigh $2\frac{1}{4}$ pounds avoirdupois (157.5 grains each), and be equal to a dollar, and a half-cent proportionate. This was the first use of the name in our coinage, and doubtless represents Jefferson's 'hundredth.' The 'cents' prior to this have not that name on them, and are really English half-pence. The difficulty of displacing a popular name is shown by that of 'penny,' which still clings tenaciously though absurdly to our cent, only half its value. Congress in 1787 established a mint in New Haven, and for years coined there the 'Fugio' or 'Franklin' cents, familiar to collectors. But from 1785 to 1788 several States coined copper 'cents' on their own account. Vermont (not yet admitted) began in 1785, June; Connecticut in 1785, October; Massachusetts late in 1786 (real cents and half-cents); New York, 1786; New Jersey, 1786 (coppers 15 to the shilling). Under the Constitution the first coinage act was passed 1792, April 2, and raised the weight of the cent to 264 grains; but on 1793, Jan. 14, it was reduced to 208, and on 1796, Jan. 26, to 168, the half-cent always being proportional. The first coinage under the new act was in 1793. This old-fashioned 'copper' remained unchanged except in pattern till 1857, and its forms from 1793 to 1857 are of seven types: (1) 1793, chain or link around the word 'cent'; (2) 1793, wreath in place of chain; (3) 1793–6, liberty cap on pike over left shoulder of 'Liberty'; (4) 1796–1807, 'Liberty' with draped bust; (5) 1808–14, filleted head with 13 stars; (6) 1816–39, plain coronet with coiled hair; (7) 1839–57, same with braided hair. No cents were coined in 1815 or 1835. Those of 1799, 1793, and 1804 are very rare, as are also the *copper cent* of 1856, and the half-cents of 1793, 1831, 1840 to 1848, and 1852. On 1851, March 3, a 3-cent piece was authorized, of $12\frac{3}{8}$ grains, 75 per cent silver, 25 copper, legal tender to 30 cents; on 1853, March 3, it was raised to .900 fine, but reduced to 11.52 grains, $\frac{3}{50}$ of the half-dollar. On 1857, Feb. 21, the half-cent was abolished, and the old cent replaced by a smaller new one, of 72 grains, .88 copper and .12 nickel. On 1864, April 22, this was supplanted by a bronze cent, 48 grains (the present one), .95 copper and .05 tin and zinc, legal tender to 10 cents; and a bronze 2-cent piece, twice its weight and legal tender.

On 1865, March 3, a 3-cent piece was authorized, ¾ copper and ¼ nickel, 30 grains, legal tender to 60 cents; but the ones and twos were made legal tender to only four cents. On 1866, May 16, a 5-cent piece (the 'nickel') was authorized, same material as the 3, 77.16 grains, legal tender to $1. On 1873, Feb. 12, all cents and their multiples were discarded except the 1, 3, and 5, as above, each to be legal tender to 25 cents; and on 1890, Sep. 26, the 3-cent piece was discarded. See NUMISMATICS.

CENT: a name given under the old Germanic constitution to a small portion of territory. Each province or district was subdivided into so many cents, and was placed under the special jurisdiction of an overseer or centenarius. The name corresponds with hundred as in English territorial division.

CENTAL, n. *sĕn'tăl* [L. *centum*, a hundred]: the new imperial hundred-weight, consisting of a hundred pounds.

CENTARE: in the metrical system, a sq. metre, about 1⅕ sq. yds.

CENTAUR, n. *sĕn'tawr* [L. *centaurus*—from Gr. *kentauros*, a herdsman who fought on horseback—from Gr. *kentĕō*, I spur; *taurcs*, a bull]: a fabulous being said to have been half man and half horse (see CENTAURS); in *astron.*, a constellation. *Centaurus* (q.v.).

CENTAUREA, n. *sĕn-taw-rē'ē* [L. *centaurēŭm*, the centaury—from *centaurus*, a Centaur—fabled to have cured the wound made by a poisoned arrow in the foot of the Centaur Chiron]: genus of plants of the nat. ord. *Compositæ*, sub-ord. *Cynaraceæ*, containing many species of annual and perennial herbaceous plants, natives chiefly of the temperate and cold regions of the e. hemisphere. Some species are common weeds, while some are frequent ornaments of flower-gardens.—The BLUE-BOTTLE, or CORN BLUE-BOTTLE (*C. cyanus*), is common in cornfields in parts of Europe and America, and indeed over the greater part of the world. It is an annual, growing to the height of about two ft., and producing its flowers in July and Aug. The florets of the disk are small and purple; those of the ray are few, comparatively large, and of a bright blue. Its flowers have long been much used in wreaths and garlands. It is common in gardens, with flowers variously modified by cultivation. Water distilled from the flowers of the blue-bottle was at one time in high repute as a remedy for weak eyes. The juice of the florets of the disk, with a little alum, dyes a beautiful and permanent blue.—The large blue-bottle (*C. montana*), native of central Europe, is still more frequently cultivated in flower-gardens. Its flowers are considerably larger, and it is a perennial.—SWEET SULTAN (*C. moschata*), native of the Levant, with fragrant flowers, also is common in flower-gardens. It is an annual or biennial.—Several species, having the involucre spiny, bear the name of STAR-THISTLE. The common STAR-THISTLE (*C. calcitrapa*) is a native of the s. parts of Europe. The Common or BLACK KNAPWEED,

CENTAUREA.

called in Scotland *Horse Knot* (*C. nigra*), is abundant in the meadows and pastures of most parts of Britain, a troublesome perennial weed, difficult of extirpation. *C. Jacea*, also called KNAPWEED, is very common in parts of Europe, and its bitter astringent root, and indeed the whole plant, were formerly used in medicine. It affords a beautiful bright yellow dye, almost as good as saw-wort.

CENTAURS, *sĕn'tawrz* [see CENTAUR]: a wild race of men who inhabited, in early times, the forests and mountains of Thessaly, and whose chief occupation was bull-hunting. Homer, the first who mentions them, describes them merely as savage, gigantic, and covered with hair. They do not appear as monsters, half-man and half-horse, until the age of Pindar. The C. are celebrated in Greek

Centaur.—From the Elgin Marbles.

mythology on account of their war with the *Lapithæ* (q.v.), and their contest with Hercules. The fact lying at the bottom of Pindar's myth may refer to the impression which the old bull-hunters of Thessaly, who spent almost their whole life, it is said, on horseback, first made on some of the neighboring tribes—viz., that the man and the horse were one creature, which, it is recorded, was the opinion entertained by the Mexicans of the Spanish cavalry. On account of their resemblance to the Satyrs the C. were at a later period introduced into the artistic representations of the Bacchic worship.

CENTAURUS, *sĕn-taw'rus*, the *Centaur:* one of the constellations in the s. hemisphere, represented on the celestial globe by a form half-man and half-horse. The stars in this constellation are, according to Ptolemy's catalogue, 37 in number; according to the Britannic catalogue, 35. It contains the stars $\alpha$ Centauri and $\beta$ Centauri, both of the first magnitude.

CENTAURY, n. *sĕn'taw-rĭ* [L. *centau'rus:* Gr. *kentau'ros*, a Centaur]: genus of plants, nat. ord. *Gentianeæ*, having a funnel-shaped regular 5-partite corolla. The spe-

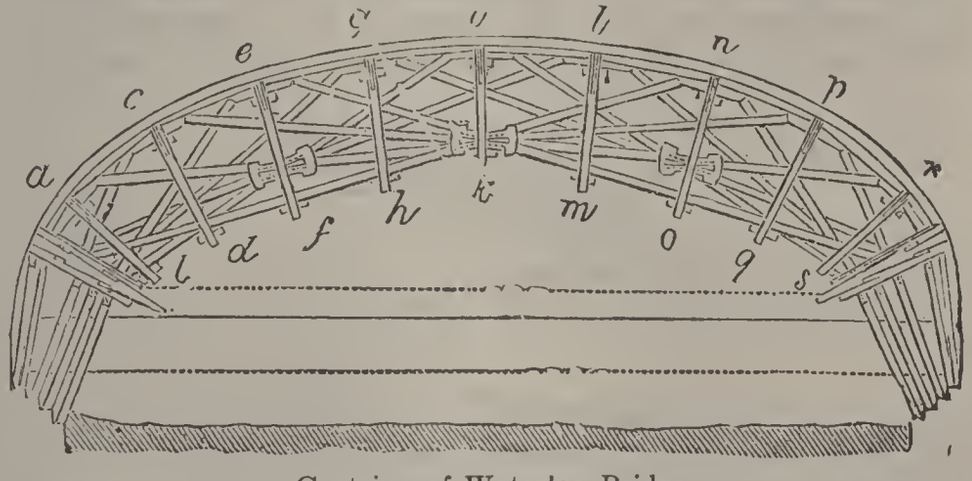
cies are pretty little annuals, natives chiefly of the temperate parts of Europe and Asia, with pink or rose-colored flowers. They possess the tonic and other medicinal virtues of gentian, and though not frequently administered by physicians, are an important domestic medicine; and the tops are collected when the plant is in flower, by the country people for use in cases of dyspepsia, in intermittent fevers, and as a vermifuge. They contain a substance called *Centaurine*, the hydrochlorate of which is said to be an excellent febrifuge.—The common centaury (*Erythræa Centaurium*) is the species most frequent in Britain; a plant of 8 inches to a foot in height, with flowers collected in loose heads, growing in dry pastures. Two or three other species are found on sandy sea-shores. Nearly allied to these is the AMERICAN CENTAURY (*Sabbatia angularis*), an annual plant with an erect quadrangular stem, extensively distributed throughout the United States and Canada, and much used in the domestic practice of America, as a prophylactic against autumnal fevers, in strong infusions and large and repeated doses. The name centaury owes its origin to the same legend with the name *Centaurea*, although appropriated to plants of a different nat. order.

CENTENARY, n. *sĕn-tē-nėr-ĭ* [L. *centenārĭŭs*, relating to a hundred—from *centum*, a hundred]: the number of a hundred; a hundredth anniversary. CEN'TENA'RIAN, n. a person a hundred years old. CENTEN'NIAL, a. *-tĕn'nĭ-ăl* [L. *centum*, a hundred; *annus*, a year]: pertaining to a hundred years; consisting of a hundred years; happening once in a century.

CENTENNIAL EXHIBITION: opened in Fairmount park, Philadelphia, 1876, May 10. An act of congress, 1871, Mar. 3, provided for the appointment by the pres. of the United States of two commissioners from each state to form a United States centennial commission; another, 1872, June 1, incorporated the centennial board of finance, and provided for the issue of stock to the amount of $10,000,000 in shares of $10 each. The board of directors was organized 1873, Apr. 1. Under Gen. Hawley as pres. of the commission, and Mr. John Welsh as pres. of the board of finance, and especially by the labors of the latter, the work of preparation was actively pushed. 236 acres were used and five buildings erected at a cost of $4,500,000. The main building, intended to exhibit manufactures, mines, science, and education, covered 20 acres, was 1,880 ft. long and 464 ft. wide, with wings respectively 416 and 216 ft. long. The roof was 70 ft. high, and was supported by trusses resting on 672 wrought-iron columns; there was an elevated square in the centre, and towers at the four corners. The exhibition was continued for six months, till Nov. 10, being open on every day except Sundays, 7,250,620 visitors paid the admission fee of 50 cents, 753,654 paid 25 cents, and 1,906,692 were free; total number 9,910,966. These represented every portion of the Union, besides foreign countries.

CENTERING, n. *sĕn tĕr-ĭng* [see CENTRE]: the framework upon which an arch or vault of stone, brick, or iron is supported during its construction. The simplest form of C. is that used by masons and bricklayers for the arches of common windows and doors. This is merely a deal-board of the required shape, upon the curved edge of which the bricks or stones of the arch are supported until they are keyed in. In building bridges or other structures where arches of great span are to be constructed, the C. is made usually of framed timbers and iron combined. The arrangement of the timbers should be such, that the strain upon each shall be mainly a thrust in the direction of its length, for if the strain were transverse a comparatively slight force would snap it, and if a longitudinal pull the whole structure would be no stronger than the joints holding the pieces of timber together. In arches of great span, such as that of Waterloo bridge, London, a longitudinal pulling strain is almost inevitable in some parts, as a beam of great length would bend to some extent under a thrusting strain. In such cases great skill and care are demanded in the designing and construction of the joints. As an arch is built from the piers toward the keystone the weight upon the haunches during construction tends to push the crown upward, and therefore the problem of designing a frame C. involves the resistance of this tendency, as well as the supporting of the weight of the materials.

The annexed figure of the C. of Waterloo bridge, designed by Rennie, presents a fine example of the fulfilment of these requirements. It will be easily seen that a weight upon *np* and *ce* will be resisted by direct thrust upon the beams passing obliquely downward from these parts; one of each pair of these oblique beams thrusts outward, and is directly supported by the abutments; the other thrusts inward toward *k*, the yielding of which is prevented by the longitudinal pull of the lower and longer oblique beams *kq*, *kr*, *kd*, *ka*, etc. In this and other modern structures cast-iron shoes have been successfully used for the




Centring of Waterloo Bridge.

tying joints subject to the longitudinal pulling strain. The flexible C., so called from its yielding at the joints

and varying its form with the load put upon it, is now abandoned. It was used chiefly by French engineers. That of Perronet for the bridge of Neuilly is a celebrated example.

Occasionally, when a very great span is required, and the navigation will permit, piers are built, or piles are driven, to support the C., and the design is much simplified thereby.

Cupolas like the Pantheon and St. Peter's at Rome, St. Paul's in London, or the flat domes of the Turkish mosques, require very effective centerings.

CENTESIMAL, n. *sĕn-tĕs'ĭ-măl* [L. *centesĭmŭs*, hundredth—from *centum*, a hundred]: the hundredth part. ADJ. hundredth. CENTES'IMALLY, ad. *-lĭ*. CENTES'IMATE v. *-māt*, to inflict the punishment of centesimation. CENTESIMA'TION, a mode of punishment for mutiny or wholesale desertion, in which every hundredth man was selected for punishment.

CENTE'TES: see TENREC.

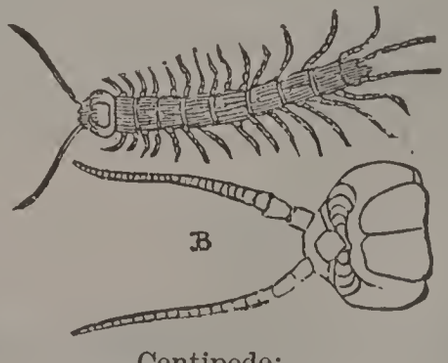
CENTIGRADE, n. *sĕn'tĭ-grād* [L. *centum*, a hundred; *gradus*, a step]: a thermometer divided, between the freezing and boiling points of water, into 100 parts or degrees (see THERMOMETER). CENTIGRAM, n. *sĕn'tĭ-grăm* [Gr. *gramma*, a letter]: in *France*, the hundredth part of a gramme.

CENTILITRE, n. *sĕn-tĭl'ĭ-tĕr*, or *sĕn'tĭ-lī-tĕr*, or *sŏn'tĭ-lē-tr*, a measure of capacity or volume, being the hundredth part of a *litre*, or a little more than six-tenths of a cubic inch; spelled also CENTILITER.

CENTIME, n. *sĕn-tēm'* [F.—from L. *centēsĭmus*, hundredth—from *centum*, a hundred]: the hundredth part of the French franc.

CENTIMETRE, n. *sĕn-tĭm'ĕ-tĕr*, or *sĕn'tĭ-mē-tĕr*, or *sŏn'tĭ-mā'tr* [F.—from L. *centum*, a hundred; Gr. *metron*, a measure]: a French measure of length, equal to ·394 in., or about 2-5ths in. English; spelled also CENTIMETER.

CENTIPEDE, or CENTIPED, n. *sĕn-tĭ-pēd* [L. *centum* a hundred ; *pedem*, a foot], (*Scolopendra*): genus of *Myriapoda*. (q.v.), having a long, slender depressed body, protected by coriaceous plates, 21 pair of legs, distinct eyes, four on each




Centipede:
B, head, magnified.

side, and antennæ with 17 joints. The name is, however, popularly extended to species of nearly allied genera. Cen-

tipedes run nimbly, feed on insects, and pursue them into their lurking-places. They have not only a pair of horny jaws, like those of insects, but also another pair of organs closely connected with the mouth, and which are regarded as transformed legs, dilated and united at the base, terminated by a strong hook, and pierced beneath the extremity for the emission of a venomous fluid, which makes their bite quickly fatal to insects, and in the case of the larger species, very painful and even dangerous to the larger animals and to man. The common C. of tropical America (*S. morsitans*) is often nine inches or a foot in length. A species found in the s. of Europe (*S. cingulata*) is nearly as large, but its bite does not seem equally venomous. It may seem strange that creatures of such aspect as centipedes should ever have been thought of as human food, but Humboldt, in his Personal Narrative, tells us that he has seen Indian children of the tribe of the Chuymas draw large centipedes out of the earth and eat them. An allied genus, *Geophilus*, of more numerous joints and slender form, contains some species which are occasionally phosphorescent, one of which, *G. longicornis*, yellow, with a rust-colored head, is very abundant at the roots of turnips, etc. It is supposed, however, to be rather useful than injurious, preying on the destructive larvæ of insects.

CENTLIVRE, *sĕnt-lĭv'er* or *sĕnt-lē'ver*, SUSANNA: abt. 1670–1723, Dec. 1; b. prob. in Ireland; dau. of a Lincolnshire gentleman named Freeman: English dramatic authoress. Her early history is obscure; but such were her wit and beauty that, on her arrival in London, though a destitute orphan, only 16 years of age, she won the heart of a nephew of Sir Stephen Fox, who, however, died shortly after their marriage. Her second husband, an officer named Carrol, lost his life in a duel. Left in extreme poverty, his widow endeavored to support herself by writing for the stage, and after producing a tragedy called *The Perjured Husband* (performed first in 1700), made her appearance on the stage. She afterward married (1706) Joseph Centlivre, principal cook to Queen Anne, with whom she lived happily until her death. Her plays—*The Busybody* (of which the leading character, 'Marplot,' is highly amusing), *A Bold Stroke for a Wife* (1717), and *The Wonder* (1714)—though not distinguished by purity of style or truthfulness of portraiture, are lively in their plots, and have kept their place on the stage.

CENTNER, n. *sĕnt'ner* [Ger. *centner*, a hundred-weight —from L. *centenarius*, of or pertaining to a hundred]: a weight of a hundred pounds, used in some parts of England and Germany; the weight of a dram, divided into a hundred equal parts.

CENTO, *chĕn'tō*: town of central Italy, 16 m. n.w. of Bologna, pleasantly situated on a fertile plain near the Reno. It is noted as the birthplace of the famous painter Guercino, whose house, adorned with paintings, is still preserved; and in the church of C. are many of his works. Pop. abt. 5,000.

CENTO, n. *sĕn'tō* [L. *cento*, a rag covering, a patchwork: Sp. and F. *centon*]: patch-work composition; name applied to literary trivialities in the form of poems manufactured by putting together distinct verses or passages of one author, or of several authors, so as to make a new meaning After the decay of genuine poetry among the Greeks, this worthless verse-manufacture came into vogue, as is proved by the *Homerocentones*, a patchwork of lines taken from Homer (edited by Teucher at Leipsic, 1793); but it was much more common among the Romans in the later times of the empire, when Virgil was frequently abused in this fashion, as in the *C. Nuptialis* of Ausonius (who gives rules for the composition of the C.), and especially in the *C. Virgilianus*, constructed in the 4th c by Proba Falconia, wife of the proconsul Adelfius, and giving, in Virgil's misplaced words, an epitome of sacred history! The C. was a favorite recreation in the middle ages. In the 12th c., a monk named Metellus contrived to make a cento of spiritual hymns out of Horace and Virgil —See *Littérature du Centon*, by M. Delepierre (1875)

CENTRAL AMERICA· is a continent of distinct geologic formation, with east and west mountain-folds, at right angles to those of North and South America. Though on the map it appears to be a mere isthmus extending in a southeasterly direction from Mexico to Colombia between the Caribbean Sea and the Pacific Ocean, it is in fact structurally much more nearly related to the West Indies, including the Gulf of Mexico and the Caribbean Sea, and to the northern coast of South America, than to the main bodies of the larger continents. Probably in the Tertiary period Central America and the Antilles together formed a great island or archipelago lying between North and South America. (Compare Robert T. Hill's *Cuba and Porto Rico*, etc.). This subject will be referred to below, in connection with 'volcanoes and soil.'

Politically, the name groups together Guatemala, Honduras, Salvador, Nicaragua, and Costa Rica: five republics which are characterized in the treaty of peace signed at Corinto, Nicaragua, 1902, Jan. 20, as 'the Central American family.' Moreover, the Isthmus of Panama at the commencement of its history under the Spanish régime was associated not less intimately with the settlements in the region north and west of it than with those of South America; British Honduras (Belize) also, an English colony, lying between Guatemala and the Caribbean Sea, has been connected about equally with the history of the Central American states and with that of Yucatan (Mexico). We shall therefore mention both Panama and British Honduras in the following historical sketch.

*Mountain System.*—The mountains described as extending directly at right angles to the cordilleras of North

and South America are part of a great Antillean system. East and west mountain ranges of this type occur in the Isthmus of Panama, Costa Rica, and the eastern parts of Nicaragua, Honduras, Guatemala, and the adjoining provinces of Mexico; also along the Colombian and Venezuelan coast of South America, and in Cuba, Haiti, and the other islands of the Greater Antilles. Two submarine ridges stretching across the Caribbean Sea, between Honduras and the Sierra Maestra range in Cuba, and from Cape Gracias á Dios to Jamaica, are regarded as being genetically a part of the same system. The interesting suggestion is made by Mr. Robert T. Hill that the Caribbean lands before the close of the Tertiary period were much more extensive than now. 'Geological surveys,' he says, 'have proved that during this time of expanding Antillean lands, the Gulf Stream flowed out from the American Mediterranean as now, but through a passage across the northern half of Florida. . . . The great banks of the western Caribbean Sea were at that time projections of land probably connecting Central America with Jamaica and possibly Cuba.' Therefore Florida, the Bahamas, the Antilles, and at least the eastern part of Central America, totally severed from North and South America, together formed either one great island, or, more probably, a group of several large islands, with volcanic chains on the east and west (see CARIBBEAN SEA), and with characteristic rocks, calcareous and igneous, which have weathered into soils of unsurpassed fertility (see CUBA).

*Volcanoes.*—A Central American group of volcanoes, with 31 active craters crossing the western ends of the Antillean folds, occurs on the Pacific side of the republics, from Costa Rica to Guatemala. The central and eastern region is shown by the observations of Mr. P. W. Chamberlain, member of the American Society of Civil Engineers, to be well watered, with comparatively low mountains, very rich soil, and a good climate—except the Caribbean coast which, from Trujillo downward, including the Mosquito territory, is hot and insalubrious. Lack of communication and means of transportation has led to the abandonment of the intermediate lands, the most attractive and extensive part of the country, nearly or quite beyond the influence of the volcanic area. The easily approachable volcanic strip (in Nicaragua, for example, between the lakes and the Pacific) has been preferred hitherto as a place of residence. Thus one who visits only the principal cities in the centre of population, seeing nothing of the naturally richer and better districts, receives the impression that this is the most volcanic region of the globe. The largest volcanoes are in the north—for example, the Acatenango, 13,012 feet elevation, in Guatemala, and in the south— for example, the Irazú and Turealba, of 12,000 feet, in Costa Rica. In Nicaragua the highest, El Viejo, is only 5,800 feet above sea-level. In Guatemala we find the volcanoes,

Fuego, Cerro Quemado, El Chato, etc.; in Salvador, Ilopango, San Salvador, and others. Earthquake shocks in the republics last mentioned, and also in Costa Rica, have been, as a rule, very severe, while those of Nicaragua are comparatively mild in force and extend over limited areas. The recorded seismic disturbances that have affected the whole country are those of 1538, 1648, 1651, 1844, and 1865. Central Nicaragua, east of the lakes, Nicaragua and Managua (the largest bodies of fresh water in Central America) is regarded as nearly immune from such disturbances. Nicaragua's centre of volcanic activity is a ridge, the Sierra de los Morabios, between the Cosigüina (whose outburst 1835, Jan. 2, was considered the grandest on record before the eruption of Krakatoa in 1883), and the Momotombo. In this ridge are 10 vents, two of which, the Telica and Momotombo, are active, and none can be properly called extinct. Southeast from the Morabios ridge is the isolated active volcano Masaya. The Orosi is in Costa Rican territory. The island of Ometepe in Lake Nicaragua has two volcanoes, one dormant, the other extinct. Comparatively few members of the Central American chain of volcanoes are of the type with which fierce eruptions are commonly associated; moreover, the fertility of the soil on their flanks, due to the high percentage of soda and potash contained in volcanic dust, tempts agriculturists to remain in this neighborhood. It will be noted with interest, also, that the proposed line of the intercontinental railway keeps near to the Pacific coast. It is probable, therefore, that for many years yet to come the best part of Central America—the central districts—will receive only secondary consideration, remaining comparatively undeveloped.

*Intercontinental Railway and Isthmian Canal.*—Two subjects of great importance to this region are: (1) The plan to connect the railway systems of North and South America at the Isthmus of Panama, so that the political and commerical capitals of all, or nearly all, American republics may be closely united by land routes. (2) The proposed shortening of the highways of the sea between the same nations by the construction of a ship canal. An all-rail route from New York to Buenos Ayres would be approximately 10,471 miles in length, of which about 5,000 miles remain to be constructed. The first International American Conference (1889–90) recommended the construction of the railroad necessary to join existing lines and give through rail communication; President Harrison approved the project (in a message, 1890, May 19); engineers were put in the field to make surveys, which were completed in 1895; in 1903, March, a commissioner from the United States was sent to the Central and South American countries to ascertain the condition of lines in operation and the prospect for the completion of the undertaking. As shown by surveys published in 1902, the line will join an extension of the

Mexican railway system on the northwestern frontier of Guatemala; it will have 230 miles in Guatemala, 220 in Salvador, 70 in Honduras, 224 in Nicaragua, and 363 in Costa Rica; in South America it will follow the curvature of the Pacific coast, though not closely, to Cuzco, Peru; and, in combination with the extensive systems of Argentina and Chile, will connect the Sierra of Bolivia with the southern capitals, Santiago and Buenos Ayres, with extensions to Rio de Janeiro and Asuncion. At present the principal railway lines in Costa Rica, Guatemala, and Honduras run from the interior to the ports. Guatemala leads, with 342 miles of railroad, Costa Rica has 222, Nicaragua 176 miles, Salvador 132 miles, and Honduras 50 miles. Such is the lack of transportation facilities between the countries of Spanish-America, a letter or express package from one of the Central American states, or even North America, intended for some of the South American republics, is sent first to Europe, to be forwarded to its destination; but the region now so isolated will lie at the crossroads of two great routes of traffic in the future.

*Races.*—Mr. H. H. Bancroft is authority for the statement that the most numerous class of the population in Central America, next to the pure Indians, are the *ladinos*, most of whom are half-breeds, including mestizos (the offspring of white and Indian), mulattoes, quadroons, octoroons, and zambos (or sambos—the offspring of Indian and negro). 'The *ladino* class furnishes the domestic servants, muleteers, small farmers and tenants, herdsmen, and not a few beggars and robbers. . . . A considerable number of *ladinos*, however, become mechanics and traders, and many have attained high positions in the Church and the state, and become distinguished for their talents and abilities. The zambos and other mixtures of the negro race reside in the coast districts,' doing the heaviest work. The Caribs, who have increased greatly in numbers since they were transported from St. Vincent by the British, are more active and industrious than the sambos. Salvadoran society, according to the same authority, has a small proportion of whites, while the mass of the population is Indian, *ladino*, and zambo; in Guatemala he found (1883) that the Indians numbered 750,000, *ladinos* or mestizos 430,000, white persons 10,000, negroes 8,000, and foreigners 2,000; in Honduras that 'the amalgamation of races has almost obliterated the line distinguishing whites from blacks.' In Costa Rica, on the other hand, the inhabitants are mainly white, and to a large extent descendants of Spaniards from Galicia, the Indians being distinct from the civilized race, and the negroes living almost exclusively on the coast. The total population of Central America, excluding Panama is about 4,000,000 (1906).

*History.*—Rodrigo de Bastidas, a notary of Triana, was the first Spaniard to explore the Caribbean coast of Central America. He embarked at Cádiz in 1500, October;

and, after reaching the mainland of South America near the present Venezuelan boundary, coasted westward and made observations of the isthmus from a point below Darien to Nombre de Dios. Columbus, on his fourth voyage to America, sailing from Cádiz 1502, May 9, and stopping at Santo Domingo on the way, arrived off the shore of Honduras July 30. There he heard reports of the wealth of Mexico, but decided to continue the voyage southward, searching for a strait that should lead across terra firma to India. Thus they passed a cape to which they gave the name Gracias á Dios, and on September 25 reached the river San Juan de Nicaragua, and heard stories from the natives which made them believe they were within a nine-days' journey of a splendid land, such as Marco Polo had described in his veracious account of travels in Asia, and that the river Ganges lay only a little beyond. On October 7 they came to the beautiful Laguna de Chiriqui, and on the adjoining Veragua coast they obtained a large amount of gold by trading with the natives.

Columbus lingered in the immediate neighborhood of the Chagre (now called Chagres) River and Colon—at Porto Bello from November 2 to 9, and at other points within a few miles for three weeks and five days. Thus during more than a month the great discoverer hovered voluntarily about the spot where the strait he dreamed of was to be cut after four centuries should have elapsed. And when he thought to return by the way he had come, abandoning the search, stress of weather held his vessels back, so that it was not until 1503, Jan. 6, that they anchored in a little river just west of Colon. He wished to plant a colony on the coast between Veragua and Cerebaro, but, hostilities breaking out between the Spaniards and the natives, the former were obliged to abandon their attempt, and once more Columbus passed the place of the future canal, clinging to the shore before setting a straight course for Jamaica.

*First Spanish Colonies.*—In 1506 Juan Diaz de Solis and Vicente Pinzon sailed along the coast of Honduras westward, exploring the Gulf of Honduras, in search of a passage by water to the Far East—India and Cathay. Several years passed before the Spanish king, Ferdinand, authorized Alonzo de Ojeda and Diego de Nicuesa to colonize and govern in his name the northern coast of South and Central America. The river Darien or Atrato was made the dividing line between their dominions. The eastern or South American portion was called Nueva Andalucia, and of this Ojeda was made governor; the western division was named 'Golden Castile,' *Castilla del Oro,* and the command given to Nicuesa. The latter secured the larger number of followers; the former, however, attracted to his standard Martin de Enciso, afterward governor, Balboa, discoverer of the Southern Sea, and Francisco Pizarro, conqueror of Peru. The forces of both governors suffered extreme hardships. Nicuesa's

capital was at Nombre de Dios, Ojeda's at San Sebastian —so named because the Indians afflicted them as that saint was tortured. Ojeda returning to Española, where he died, Enciso, Balboa and Pizarro removed the capital of Nueva Andalucia to Antigua del Darien—that is, a point within Nicuesa's dominions; but the natives of Darien did not poison their arrows. In the contest for supremacy that ensued, Nicuesa was the loser. Balboa assumed command, and Antigua became the centre of Spanish enterprise in that part of America. In 1513, Sept. 25, Balboa discovered the Southern Sea, and four days later took possession of it, with all its lands and ports and islands in the name of the king and queen of Spain. Before news of this discovery reached the Spanish court, a successor to Balboa had been appointed in the person of Pedrarias (also called Dávila). In 1517 Balboa was falsely charged with treason, and executed. Pedrarias Dávila, being superseded in command, migrated to the south coast and founded the city of Panamá 1519, Aug. 15.

A voyage into the unknown northwest from Panamá was made in 1522 by Gil Gonzales, who explored the Dulce and Nicoya gulfs indenting Costa Rica's southern shore. Thence northward 50 leagues he went, to the domain of a chief whose name was Nicaragua, and who dwelt near the principal lake of that region. Gonzales learned that this lake, though lying near the Southern Sea, had an outlet to the Caribbean. In his narrative he says that the discovery is important, inasmuch as only 'two or three leagues of very level road separate the two seas.' The expedition returned to Panamá in 1523, after baptizing thousands of natives and securing 112,000 *pesos* of gold. In 1521, Sept. 15, Panamá was made a city with royal privileges; the episcopal see was transferred to it; from this base expeditions were sent out toward Peru as well as into the northwest. Pedrarias, in 1524, dispatched Francisco Hernandez de Cordova with Hernando de Soto and other captains to Lake Nicaragua. Gil Gonzales, continuing his discoveries in Honduras and Nicaragua, came into collision with de Soto; and only a little later one of the captains of Hernan Cortez, the Spanish conqueror of Mexico, appeared as a claimant for the territory of Honduras.

In the latter part of October, 1524, Cortez set out from Mexico, marching to Honduras with an army of about 100 horsemen, 40 archers and arquebusiers, and 3,000 native warriors and servants. After making himself governor of the country, he returned in triumph to Mexico City in 1526, May. Pedrarias went to Nicaragua about the same time: there were rival Spanish governors even then in Nicaragua and Honduras. Guatemala and Salvador were overrun by Pedro de Alvarado, second in command to Cortez: the former country, in which a great empire had existed at the beginning of the Christian era, was inspected by Alvarado in 1522, and conquered with a small force of Spaniards and native allies before two years had passed.

*Veragua.*—In 1535 an unsuccessful attempt to colonize Veragua was made in the interest of the descendants of Columbus (on whom the titles 'Duke of Veragua,' etc., had been conferred), and a still more calamitous enterprise was that of Diego Gutierrez, a citizen of Madrid, who led an expedition to Costa Rica north of Veragua in 1540. Francis Drake, English privateersman, attacked Nombre de Dios in 1572. Again, in 1595, Drake (now Sir Francis, knighted for his feat of sailing round the world), Sir John Hawkins and others took Nombre de Dios; but an English force of 750 men sent to attack Panamá was defeated by the Spaniards when half-way across the isthmus. Drake, dying 1596, Jan. 28, was buried off Porto Bello. The conquest of Costa Rica was undertaken by Nicaraguan Spaniards in 1560. Partial success rewarded the efforts of the soldiers; meanwhile, however, great progress had been made in the pacification of that province by the efforts of Franciscan friars.

*Buccaneers in the 17th Century.*—Captain William Parker, sailing from Plymouth in 1601, November, captured Porto Bello. In 1616, December, the king of Spain informed the governor of Castilla del Oro that he and the commercial world believed that communication might be easily established between the oceans by constructing a canal. This was the century of English depredations and of Spanish idle dreaming—Spain's centuries of vigorous expansion having passed. In 1668 the Welsh buccaneer Morgan plundered Porto Bello, his foul cruelty rivaling any Spanish misdeed in this blood-stained region. Three years later, having at his disposal a fleet of 37 ships and a force of 2,000 fighting men, he captured Panamá (1671, January). The inhabitants set fire to their homes, and built a new city of the same name at a little distance in a locality less exposed to attack. Granada, in Nicaragua, was sacked by French and English pirates in 1686.

*Scotch Colony on the Isthmus.*—A number of influential Scotchmen, chief of whom was the founder of the Bank of England, William Paterson, were authorized by the Scottish parliament in 1695 to found colonies in savage lands; afterward obtaining letters patent from William III. of England. Paterson chose Darien, believing the control of the traffic of the isthmus to be essential to the prosperity of England; he certainly was not, as is incorrectly and commonly stated, merely anxious to make money for his company, and reckless of consequences to the colonists. See Bannister's *Life;* Rodriguez's *Anexion de Cuba;* etc. The largest and most costly expedition that had yet been fitted out for colonization in America sailed from Leith, 1698, July 26, and founded New Edinburgh. Subsequently recruits were sent out to them; but the project came to a miserable end. More than 2,000 lives and several millions of money had been lost, when the survivors were starved into surrender by the Spaniards.

A British squadron commanded by Admiral Edward Vernon (1739, Nov. 21), took Porto Bello, but was defeated at Cartagena. Meanwhile English settlements of a very peculiar character had been begun in Mosquitia and at Belize.

*Mosquito Coast.*—The Misskito tribe called by the Spanish and English 'Sambos' or 'Mosquitos,' a hybrid people, descendants of fugitive slaves, 'Cimarrones,' and natives, ruled by an hereditary king, dwelt on the eastern coast of Honduras and Nicaragua in the 17th century. Unoccupied by the Spanish, this coast was frequented by buccaneers, who made Cape Gracias á Dios, on the dividing line between the colonies just mentioned, their rendezvous. Small settlements of English adventurers existed in this region; by the treaty of Madrid (1670) certain rights were conceded to Great Britain; the British claim was asserted (1744) by sending troops and building forts, but withdrawn (1786) when an agreement was reached as to the cession by Spain of the territory on the north coast of the Gulf of Honduras to which we shall now refer.

*The English Colony.*—The foundation of Belize, on the coast east of Guatemala and south of Yucatan, by the Scotch buccaneer Peter Wallace, has been described in the article 'Belize.' The ex-freebooters of Belize, reinforced by other white adventurers, Mosquito Indians, etc., were able to exploit the rich forests and hold their own, or more, in the contest for the possession of this territory waged at intervals between the authorities of Yucatan and the wood-cutters (regarded as interlopers) from 1733 until the end of the 18th century. The treaty of Versailles (1783) defined the limits of Belize; such limits were more precisely stated in the treaty signed at London, 1786, July 14; but the boundaries were subsequently extended by encroachments of the wood-cutters. Thus England, retaining the region now known as the colony of British Honduras, abandoned possession of the Mosquito coast, though her claim to exercise a certain degree of influence in the latter territory (from which the Spaniards were expelled by the Sambos in 1796) was not expressly and absolutely surrendered until 1850 or 1860. (See treaties mentioned below). Before that determination, several reverses were sustained in Nicaragua. An English force was repulsed at Fort San Carlos in 1769. A few years later the design to sunder the Spanish provinces of Central America, and at the same time to capture a route for an interoceanic canal, by taking possession of Lake Nicaragua and the cities of Granada and Leon (see Bancroft's *Central America*), proved infeasible. An English force of about 1,800 men, including a party of marines under Horatio Nelson, was forced by the deadly fevers to abandon the attempt.

*Spain in Possession.*—Except Belize, Mosquitia, and large tracts in which the Indians remained nearly undisturbed, Spain now held the land, but no longer had energy

or opportunity to develop its natural resources. The natives more docile and serviceable than in other parts of America, seldom increased the difficulties of the situation by uprisings; there was, however, little incentive to accumulate property in a land menaced constantly for a hundred years by English, Dutch, and French pirates and the mother country had grown too poor to take the lead in industrial enterprises. The several divisions of an apathetic population were easily drawn together for administrative purposes: the captain-general of Guatemala by the middle of the 18th century controlled the provinces of Costa Rica, Honduras, Nicaragua, and Salvador, beside others now within Mexican boundaries. Revolt against Spain was the form in which the spirit of the people, awakened from this lethargy, naturally expressed itself. Unfortunately armed revolt has ever since been too closely identified with progress in the popular conception. The first weak blow for Central American freedom was struck in San Salvador, 1811, Nov. 5. A sequel to this attempt (in Leon, Nicaragua, 1811, Dec. 13, duplicated this Salvadoran effort, in result as in motive. A third failure was recorded when the Colombian insurgents (1820) fitted out a combined sea and land expedition to operate against the towns of Omoa and Trujillo. The Isthmus of Panama cast in its lot with South America, rather than with Central America, by voluntary annexation to the republic of Colombia, 1821, Nov. 28. (For its subsequent history see COLOMBIA and PANAMA). The declaration of independence at the city of Guatemala 1821, Sept. 15, was little more than an echo of the triumphant cry of other Spanish-American colonies in revolt; it was soon followed (1822, Jan. 5), by a degree of the *junta directiva* annexing Central America to Mexico. Salvador refusing to join in this surrender, a war with Guatemala ensued. Before 18 months had passed the government of Iturbide in Mexico had been overthrown, and the Central American provinces resolved to form a union and constitute a single nation. In 1823, July 1, a national constituent assembly expressed this purpose, the name chosen for the nation being *Provincias Unidas del Centro de América.*

*Slavery Abolished.*—Though laggards in the race to win freedom, the Central Americans were prompt in bestowing it. The laws of 1823, Dec. 31, and 1824, April 17 and 24, emancipated their slaves and declared that slaves of other countries on coming to Central America should be freed. When dissensions and civil war broke up their confederacy, they had at least taken one step forward, in advance of their neighbors. The congressional decree of 1838, May 30, granting to the states the privilege of unrestrained action in most important matters practically dissolved the union, though Salvador tried to maintain or renew it long after the other confederates withdrew. Nicaragua, on recovering her autonomy, became involved in a dispute with Great Britain, the latter upholding the

claim of the Mosquito king to all the territory lying between Cape Gracias á Dios and the mouth of the San Juan River, and sending (January 1848) two warships to occupy the port of San Juan. Nicaragua yielded provisionally to superior force. At this point the intervention of the United States was felt. The Clayton-Bulwer treaty, concluded at Washington 1850, April 19, between the United States and Great Britain, provided that neither power should occupy, fortify, colonize, or exercise dominion over any portion of Central American territory (except Belize), or make use of a protectorate in any form. In regard to this treaty the statements have been made: (1) That it guarantees Central American independence; (2) That it encourages the maintenance of English influence. Both statements are correct. The English influence was considered beneficial within certain limits (see BELIZE). By the Zeledon Wyke treaty of 1860, Jan. 28, England ceded to Nicaragua absolutely the protectorate over the Mosquito coast. In 1901 the Clayton-Bulwer treaty was replaced by the Hay-Pauncefote treaty, which makes no specific guarantees, and leaves large discretion to the United States.

*Walker's Campaign.*—While the diplomacy of the government of the United States was in the main considerate and helpful at this time, the conduct of some of her individual citizens left much to be desired. San Juan del Norte, or Greytown, was bombarded by the United States sloop-of-war-Cyane, and burned to the ground by a landing party from that vessel 1854, July 13, the excuse offered for this violence being an alleged insult to the United States minister to Nicaragua. William Walker, a native of Nashville, Tenn., of Scotch descent, sailed from San Francisco, Cal., 1855, May 4, on the brig Vesta, with 58 men, to take part in the little wars of political factions in Nicaragua. Before long he found himself at the head of a considerable force composed of Americans, European adventurers, and natives, with whose aid he became master of the situation, forced the people to elect him to the presidency, and was inducted into office, 1856, July 12. Attacked by the combined forces of Salvador, Costa Rica, Guatemala, and Honduras, he was obliged to capitulate. Returning in 1860 with another filibustering expedition (this time landing at Trujillo on the coast of Honduras), he was captured, tried by court-martial, sentenced to death, and executed.

Renewal of effort to achieve Central American unity was due in large measure to President Barrios of Guatemala (1873–1885). In 1885 he issued a proclamation, in which he explained the advantages of union, and disclaiming any personal desire for extended rule, he announced the consolidation of the five states into one republic. This, of course, was the equivalent of a declaration of war on the recalcitrant states. Guatemala and Honduras stood by the president; but the other states, believing they saw in this coercion a desire on the part

of Barrios to make himself dictator of all Central America, prepared for resistance. First, however, they appealed to Mexico and to the United States to intervene and check the plans of the president. Mexico sent a protest against coercion, and the United States, disapproving of forcible union, sent warships to protect American interests. Nothing, however, could change Barrios's plans, and when Nicaragua, Costa Rica, and Salvador formed a defensive and offensive alliance, he led an army into Salvador, 1885, March. At first he drove the Salvadoran troops before him, but in an attack on Chalchuapa, his army was defeated and he was killed. At his death the plan of coercing the states into union collapsed. In more recent years efforts were made to bring about an amicable association of the states. In 1895 Nicaragua, Salvador, and Honduras joined to form the 'Greater Republic of Central America,' but this loose union lasted only a few years. Again in 1902, January, as was noted above, commissioners from Nicaragua, Costa Rica, Honduras, Salvador, and Guatemala met at the port of Corinto in Nicaragua and signed 'a convention of peace and obligatory arbitration,' a happy augury for the future.

In 1907, February, however, the peace of Central America was rudely disturbed and all chance of peaceable union indefinitely deferred by a war that broke out between Nicaragua and Honduras. These two countries had had trouble over a boundary question, which had been arbitrated in 1906, December, by the King of Spain. The decision was not satisfactory to Nicaragua, and a small Nicaraguan garrison having been slaughtered by some Honduran insurgents, war was declared. Salvador gave assistance to Honduras, but the Nicaraguan forces under President Zelaya were successful. Tegucigalpa, the capital of Honduras, was captured and President Manual Bonilla of that State was forced to flee the country. A provisional president took his place, and the influence of Zelaya is now dominant in Honduras. In the latter part of April, 1907, peace was declared between Nicaragua and Salvador, and these States have invited their sister republics to attend a congress for the purpose of signing a general treaty of friendship that shall provide for the compulsory arbitration of all disputes.

For other recent events in the various states we refer our readers to the separate articles on each of the five republics.

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CENTRAL CITY: capital of Gilpin co., Colo., 40 m. w. by n. of Denver, on the Colo. Central railroad, at the e. base of the Snowy Range in the Rocky Mountains. It is a centre of gold mining; the Gregory lode, near by, was the first discovered in Colo. Central City has several quartz-mills, banks, churches, an opera-house, newspapers, and many good buildings. Elevation, 8,500 feet. Pop. (1910) 3,200.

CENTRAL FORCES: those forces which cause a moving body to tend toward some point or centre, called the centre of force or motion. The doctrine of C. F. has for its starting point the first law of motion—viz., that a body not acted on by any external force will remain at rest, or move uniformly in a straight line. It follows from this law that if a body in motion changes either its velocity or its direction, some external force is acting upon it. The doctrine of C. F. considers the paths which bodies will describe round centres of force, and the varying velocity with which they will pass along in these paths. It investigates the law of the force which will cause a body to describe a known curve, and solves the inverse problem, and many others, the general statement of which would convey no clear idea to the unmathematical reader. As gravity is a force which acts on all bodies from the earth's centre, it affords the simplest general illustration of the action of a central force. If a stone be thrown into the air, gravity deflects it from the linear path which it would otherwise pursue, and makes it describe a curved line which we know would, in vacuo, be a parabola. Again, the moon is held in her orbit round the earth by the action of gravity, which is constantly preventing her from going off in the straight line tangent to her path at any instant, which she would do, according to the first law of motion, if not deflected therefrom by any external force. To that property of matter by which it maintains its state of rest or motion, unless acted upon by other matter, has been given the name *inertia*.

To show how, through the action of a central force, a body is made to describe a curved path, suppose it to have moved for a finite time, and conceive the time divided into very small equal parts; and instead of the central force acting constantly, conceive a series of sudden impulses to

be given to the body in the direction of the centre, at the end of each of the equal intervals, and then observe what, on these suppositions, will happen. Let S (see fig. 1) be the centre, and let the original motion be from A, on the line AB, which does not pass through S. In the first interval, the body will move with a uniform velocity, say, from A to B. In the second, if acted on by no force, it would move on in AB produced to *c*, B*c* being = AB. But when it arrives at B, it receives the first sudden impulse toward S. By the composition of velocities (q.v) it will move now with a new but still uniform velocity in BC instead of B*c*, BC being the diagonal of the parallelogram of which the sides represent its impressed and original velocity. Having reached C at the end of the second interval, it receives the second impulse toward S. It will now move in CD instead of in BC produced. If then, we suppose the periods of time to be indefinitely diminished in length, and increased in number, the broken line ABCD will become ultimately a continuous curve and the series of impulses a continuous force. This completes the explanation.

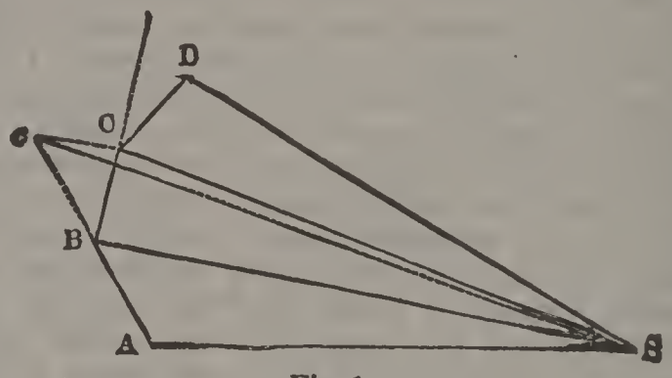



Fig. 1.

Going back, however, to our supposition, we may here establish Newton's leading law of central forces. That the body must always move in the same plane results from the absence of any force to remove it from the plane in which at any time it may be moving. The triangles ASB and BSC are clearly in the same plane, as the latter is in that in which lie the lines B*c* and BS. Also, since the triangles ASB, BS*c* are equal, being on equal bases, AB, B*c*, and triangle BSC = triangle BS*c*, as they are between the same parallels, *c*C and BS, it follows (by Euclid I. 37) that ASB = BSC. So BSC = CSD; and so on. In other words, the areas, described in equal times by the line (called the radius vector) joining the centre of force and the body, are equal. As this is true in the limit, we arrive by the composition of the small equal areas, at the law: that the areas described by the lines drawn from the moving body to the fixed centre of force, are all in one plane, and proportional to the times of describing them. Very few of the laws of C. F. are capable of being proved like the preceding, without drawing largely on Newton's lemmas, with which the average reader is not acquainted.

## CENTRAL FORCES.

*Contrifugal añd Centripetal Force.*—We have shown that a body continually drawn to a centre, if it has an original motion in a line that does not pass through the centre, will describe a curve. At each point in the curve, it tends, through its inertia, to recede from the curve, and proceed in the tangent to it at that point. It always *tends* to move in a straight line in the direction in which it may at any time be moving, and that line, by the definitions of a tangent and of curvature, is the tangent to the curve at the point. At the point A (see fig. 2), it will endeavor to proceed in AD; if nothing hindered it, it would actually proceed in that line, so as, in the time in which it describes the arc of the curve AE, to reach the point D, and thus recede the length DE from the curve; but being continually drawn out of its direction into a curve by a force to a centre, it falls below the point D by the distance DE. The force which draws it through this distance is called the centripetal force, and that which would make it recede in the same time through the distance DE from the curve is called the centrifugal force. It is to be noted that the centrifugal force is not, like the centripetal, an impressed or external force acting on the body: it is simply the assertion of the body's inertia under the circumstances produced by the centripetal force.

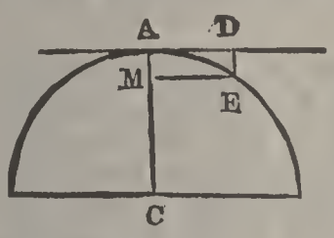


Fig. 2.

Illustrations are numerous and familiar of the action of the centrifugal force. A ball fastened to the end of a string, and whirled round, will, if the motion is made sufficiently rapid, at last break the string, and fly off. A bottle of water on a string may be whirled so rapidly that, even when upside down, the water will still be retained in it, by the centrifugal force pressing it up against the bottom. The centrifugal action will be found to increase with the velocity. In all cases of a body moving in a circle, the force, it can be proved, varies as the square of the velocity of the body at the moment, and in the inverse ratio of the radius. In case of constrained motion, such as machinery and the like, if the number of the revolutions per minute is given, or what is the same thing, the angular velocity is fixed, then the actual velocity is proportional to the radius and the C. F. is also proportional to the radius; but if the actual velocity is fixed the C. F. is inversely proportional to the radius. In these cases the C. F. is merely the tension which is brought into play in the material of the rotating body to prevent it from flying away from the axis. Since in the case of orbital motion the velocity varies as the radius inversely, it follows that the force is as the inverse cube of the radius. As in the case of circular motion the body always is at the same distance from the centre, it follows that the centrifugal and centripetal forces are equal at all points of a circular orbit. The general law for all

orbits is, that the centrifugal force varies as the inverse cube of the distance from the centre. Since the attractive force of gravitation varies as the inverse square of the distance it may hence be shown that the centrifugal force gives perfect security, notwithstanding the constant attraction of the sun, and that the planets, so far as that attraction is concerned, will never fall into the sun if moving in an unresisting medium.

The doctrine of C. F. owes more to Kepler and Sir Isaac Newton, of whose philosophy it makes a considerable branch, than to all the rest of the philosophers, though almost all the leading mathematicians have contributed to it. The doctrine of centrifugal forces was first mentioned by Huygens, at the end of his *Horologium Oscillatorium*, 1673; but Newton was the first who fully handled the doctrine, at least so far as regards the conic sections.

CENTRALIA, Ill.: a city in Marion county; on the Illinois Central, Southern, Chicago, B. & Q., and the Illinois Southern R.Rs.; 60 miles east of Saint Louis and 252 miles southwest of Chicago. It is situated in the famous fruit-belt of southern Illinois and carries on an extensive fruit trade. The Illinois Central machine shops, employing 400 men, are located here, there are three coal mines, employing 700 men, window glass works with 200 employes, and the city carries on many minor industries, such as the manufacture of flour, envelopes, rails, fruit-boxes, knit goods, iron and steel, etc. There are two banks capitalized at $130,000. Religious services are held in 10 church edifices and for educational purposes there are an excellent high school and graded public schools, supplemented by a Carnegie Library. Centralia was first settled in 1853, and became a city in 1854, the affairs of the community now being administered by a mayor and council of 10 members elected every two years. The city owns the waterworks. Pop. (1910) 9,680.

CENTRALIA, Wash.: city in Lewis county, on the Northern Pacific R.R. The chief resources of the city are derived from the lumber industry and from farm and dairy products. There are two banks with a combined capital of $60,000, several public schools, with an enrollment of 1,145 pupils, and many handsome church edifices. Centralia was first settled in 1857 by James Cochran, became a borough in 1873, and a city in 1890. The present form of government is by a mayor and council of seven members. The mayor is elected annually and the councilmen biennially. Pop. (1910) 7,311.

CENTRAL INDIA: a group of States in India, divided into nine political agencies, but feudatory to Great Britain through an agent of the govgen. The chief of them are Gwalior or Scindiah, Indor or Holkar, Rewah, and Bhopál. The group is bounded on the n. by Rajputáná, the N. W. Provinces, and Oudh; e. by the Chhotá Nágpur division

of Bengal, s. by the Central Provinces, and w. by Bombay. Estimated area, 78,772 sq. m. Pop. (1901) 8,628,781.

CENTRALIZATION, *sĕn-tral-īz-a'shŭn:* in *politics,* a tendency to administer, by the sovereign or the central government, matters which had been previously under local management. We cannot properly use the term in relation to an established despotism, for there everything is already directed from the centre. The legitimate application is to a state of change from local to central management—a change in the opposite direction, would, on the same principle, be called localization. Of this latter change, however, there are scarcely any recent examples unless in the systems of self-government lately communicated to some of the British colonies. Ever since the existing European states began to rise from the chaos of the fall of the Roman empire, there has been a continued progress in centralization. That empire itself developed the first stages of centralization over a vaster extent than the world had known before. The empire, such as it had become in the days of Constantine, was the type after which the European monarchs, such of them especially as became more powerful than their neighbors, were ever striving; and a few of them, such as Charlemagne, and, long afterward, Charles V., seemed to have almost restored it. In Great Britain, centralization may be traced from the time when there were about a dozen kings in Britain, and perhaps as many in Ireland, till the united kingdom came under the rule of one monarch. A subsidiary centralization at the same time made silent progress, absorbing the feudal power of the aristocracy and the municipal privileges of the corporations. In other countries—as, for instance, in France, notwithstanding her desperate struggles for freedom, this process of centralization has tended to a pure irresponsible despotism. With so sad a result before their eyes, a distrust of centralization has not unnaturally been felt by some inhabitants of Great Britain. But the British constitution possesses a grand remedy which turns the process to good use instead of mischief. While administrative authority has been centralizing in the crown, the controlling power of parliament has been increasing at a more rapid ratio, so that the vesting of a function in the crown or central government, means the putting it under the control of parliament, and especially of the people's representatives in the house of commons. There is nothing done in any of the offices under the government for which a secretary of state, or some other member of the ministry, may not at any time be called to account in parliament. The efficiency of this control was in a manner proved by one or two instances in which offices with central powers were created, without being connected with any of the great state departments. There were, for instance, the English poor-law board, and the board of health. Both created much discontent and outcry about centralization, and it was found necessary to transfer their functions to the great

government departments, the heads of which are immediately responsible to parliament. It is not the policy of Great Britain in any case to abolish local management, but rather to aid and direct it from the central authority. The constituents of local bodies are often disinclined to watch or control them and the business falls into the hands of incapable or designing men, or is otherwise mismanaged. A very little central help—especially from a quarter where the proceedings of other bodies of the same kind are known—remedies such defects. One of the methods in which the government has of late been in use to exercise its central power, has been by the appointment of inspectors, who make reports which are laid before parliament. This is, in reality, nothing more than a method of concentrating public opinion on the proceedings inspected and reported on, and as such it is very efficacious.

In the United States a fear of increasing centralization is sometimes expressed; but—except that the result of the war of secession was to confirm the sovereignty of the general government in those departments of common concern in which its sovereignty had been expressly established by the constitution—no evidence is presented of any process of centralization tending to the withdrawal of any merely local interests from the sphere of the appropriate local government.

CENTRAL PARK: see NEW YORK.

CENTRAL PROVINCES OF INDIA: see INDIA, BRITISH.

CENTRE, or CENTER, n. *sĕn′tėr* [F. *centre*—from L. *centrum*, the middle point; Gr. *kentron*, a sharp point]: the middle point or place; V. to place on the middle point; to collect to one point; to settle exclusively on one object; to rest on. CEN′TRING, imp. *-trĭng*, or CEN′TERING, imp. *-tėr-ĭng*. CEN′TRED or CEN′TERED, pp. *-tėrd*. CEN′TRAL, a. *-trăl*, placed at or near the middle. CEN′TRALLY, ad. *-lĭ*. CEN′TRALIZE, v. *-īz*, to draw or bring to a centre. CEN′TRALI′ZING, imp. CEN′TRALIZED, pp. *-īzd*. CEN′TRALIZA′TION, n. *-zā′shŭn*. CENTRALISM, n. *-ĭzm*, the combination of several parts into one whole. CENTRAL′ITY, n. *-ĭ-tĭ*, state of being central. CENTRE-BIT, n. *-tėr-bĭt*, an instrument with a projecting conical point, working on an axis, for boring circular holes. CENTRE OF GRAVITY, that point of a body which, being supported, the whole body will remain at rest, even though acted upon by gravity. CENTRE OF MOTION, the point in a body which remains at rest, while all the other parts move round it. CEN′TRICAL, a. *-trĭ-kăl* and CEN′TRIC, a. *-trĭk*, placed in or near the centre or middle. CEN′TRICALLY, ad. *-lĭ*. CEN′TRICALNESS, n.

CEN′TRE OF GRAV′ITY: that point in a body or system of bodies rigidly connected, upon which the body or system acted upon only by the force of gravity, will balance itself in all positions. Though the action of gravity enters this definition, many of the properties of the point are independent of that force, and might be enun-

ciated and proved without conceiving it to exist. By some, accordingly, the point has been called the *centre of magnitude*, and by others, the *centre of parallel forces*. Such a point exists in every body and system, and only one such point. Every body may be supposed to be made up of a multitude of minute particles connected by cohesion, and so far as its balance under gravity is concerned, each of these may be supposed to be removed, and its place occupied by a force proportioned to its weight. Instead of the body, on these suppositions, we should then have a system of parallel forces, the lines from the various particles to the earth's centre being regarded as parallel. But a system of parallel forces (see PARALLEL FORCES) has a single resultant acting through a fixed point, whose position is independent of the position in space of the points of application of the component forces, provided their relative positions in the system continue unchanged. This point is the C. of G.; and if it be supported, it is clear that the body will balance itself upon it in all positions. The same reasoning obviously applies to any system of bodies rigidly connected. It is usual to demonstrate this and the general rule for finding the C. of G. by proving it first in the case of two heavy particles forming a body or system, and then extending the proof to the case of any number of particles. Let P and Q (see fig. 1) be two heavy particles. Join P and Q, and divide the line PQ in C, so that weight of P : weight of Q :: CQ : CP. Then C will be the C. of G. of P and Q. Draw ACB horizontal, and PM, QN vertical, meeting AB in M and N. Then

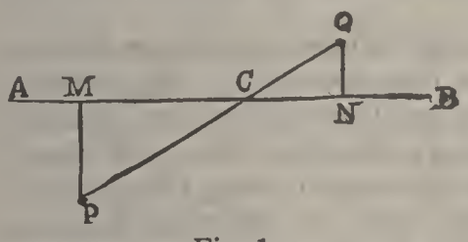


Fig. 1.

if P and Q represent the weights of P and Q, we have P : Q :: CQ : CP. But CQ : CP :: CN : CM by similar triangles. Therefore P : Q :: CN : CM, and P.CM = Q.CN. P and Q, therefore, are balanced about C. See BALANCE and LEVER. This is true in all positions of P and Q, for no assumption was made as to their positions. C, therefore, is their centre of gravity. Also, we may conceive P and Q to be removed (see PARALLEL FORCES), and in their stead a particle at C equal to them taken together in weight. If, now, the system contained three, it is clear how we should proceed to find its centre of gravity; having found the C. of G. of two, we should consider the system as formed of two—viz., the equivalent of the first two at their C. of G., and the third, when the case would fall under that already treated; and so on, extending the rule to a system containing any number of particles. Apart from this rule, however, it is possible, in the case of most regular homogeneous bodies, to fix upon their centres of gravity from general considerations. The C. of G. of a straight line, for instance, must clearly be in its middle point. So the C. of G. of a uniform homogen-

eous cylinder must be in the middle point of its axis. It must be in the axis, for the cylinder clearly is equally balanced about its axis. It must also be somewhere in its middle circular section, for it will balance itself on a knife-edge under that section. It must, therefore, be in the point where the section cuts the axis, or in the middle of the axis. The C. of G. of a uniform material plane triangle may be found from similar considerations. The triangle ABC (see fig. 2) may be supposed to be made up of uniform material lines parallel to its base AB; each of these will balance upon its middle point. The whole triangle, therefore, will balance upon the line CD, which bisects the base AB and all lines parallel to it. In the same way the triangle will balance upon the line AE, bisecting BC. But if a figure balances itself upon a line, its C. of G. must lie in that line. The C. of G. of the triangle is therefore in CD, and also in AE. It must therefore be at *g* where these lines intersect, *g* being the only point they have in common. Now, by geometry, we know that *g* divides CD, so that $Cg = \frac{2}{3}$ CD. Hence the rule for finding the C. of G. of a triangle: Draw a line from the vertex, bisecting the base, and measure off *Cg*, two-thirds of the line. *g* is the center of gravity. By a similar method, the C. of G. of a great number of figures may be determined.

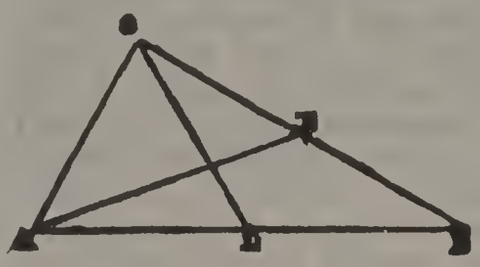


Fig. 2.

The above method applies only where the figure of the body is regular, and its mass homogeneous. But many bodies, besides being irregular, are formed by the agglomeration of particles of different specific gravities. Of these the C. of G. can be found only by experiment, though not always satisfactorily. Let the body be suspended by a string and allowed to find its position of equilibrium. The equilibrium being due to the tension of the string counterbalancing gravity, it follows that the tension is in the same line with that on which gravity acts on the body. But the tension acts on the line of the string, which therefore passes through the centre of gravity. Mark its direction through the body. Suspending it, then, by another point, we should ascertain a second line in which lies the centre of gravity. The C. of G., then, must be where these lines intersect.—For the effect on the stability of bodies of the position of the C. of G., see STABILITY.

CEN'TRE OF GYRA'TION: point at which, if the whole mass of a body rotating round an axis or point of suspension were collected, a given force applied would produce the same angular velocity as it would if applied at the same point to the body itself. The C. of G. bears a strong analogy to the centre of oscillation. The cases differ only in this, that in the latter the operating forces

are supposed to act at every point of the moving body, while in the former there is only one force acting upon one point. The C. of G. is found by the following rule: Divide the moment of inertia of the rotating mass by the mass of the body, and extract the square root of the quotient. The result is the distance of the point from the axis of rotation. The moment of inertia, it may be stated, is the sum of the products of the weight of each point of the mass by the square of the perpendicular distance of that point from the axis.

CEN'TRE OF MAG'NITUDE, or CENTRE FIGURE (see CENTRE OF GRAVITY): the point on which plane figures and curved surfaces would balance themselves, supposing their areas to have weight. Thus, the centre of a circle is its centre of magnitude. Otherwise, C. of M. or C. F. is a point so situated that all straight lines passing through it and terminated by the circumference or superficies of the figure or surface are bisected in it.

CEN'TRE OF OSCILLA'TION: the point in an oscillating body which is occupied by the particle in which the accelerating and retarding effects of the other particles are mutually neutralized: see PENDULUM, where it is shown that the time of a pendulum's vibration increases with its length, being always proportioned to the square root of its length. This is strictly true only of the simple pendulum, in which the pendulous body is supposed to have no determinate magnitude, and to be connected with the point of suspension by an inflexible wire without weight. If, however, the vibrating body have a determinate magnitude, then the time of the vibration will vary, not with the square root of its length, but with the square root of the distance from the axis of suspension of a point in the body called its centre of oscillation.

If each part of the vibrating body were separately connected with the axis of suspension by a fine thread, and entirely disconnected from the rest of the body, it would form an independent simple pendulum, and oscillate as such—the time of each vibration being as the square root of the length of its thread. It follows that those particles of the body which are nearest to the axis of suspension would, as simple pendulums, vibrate more rapidly than those more remote. Being connected, however, as parts of the solid body they vibrate all in the same time. But this connection does not affect their *tendencies* to vibrate as simple pendulums, and the motion of the body which they compose is a compromise of these tendencies of its particles. Those nearest the axis are retarded by the more remote, while the more remote are urged on by the nearer. Among these particles there is always one to be found in which the accelerating and retarding effects of the rest are mutually neutralized and which vibrates in the same time as it would if it were unconnected with the other parts of the body, and simply connected by a fine thread to the axis of suspension. The point in the body occupied

by this particle is its centre of oscillation. By this C. of O. the calculations respecting the vibration of a solid body are rendered as simple as those of a molecule of inconsiderable magnitude. All the properties which belong to a simple pendulum may be transferred to a vibrating body of any magnitude and figure, by considering it as equivalent to a single particle of matter vibrating at its centre of oscillation.

The determination of the position of the C. of O. of a body usually requires the aid of the calculus. It is always further from the axis of suspension than the centre of gravity is, and always in the line joining the centre of gravity and the point of suspension, when the body is suspended from a point. The rule for finding it in such a case is: If S be the point of suspension, and O the C. of O., and $m$ be the mass of any molecule at a distance $d$ from S, $SO = \frac{\Sigma (md^2)}{M.Sg}$; or it is the quotient obtained by dividing the moment of inertia of the body by the product of its mass into the distance of its centre of gravity from the point of suspension.

CEN'TRE OF PERCUS'SION, in a body or a system of bodies revolving about a point or axis: that point which striking an immovable object the whole mass shall not incline to either side, but rest, as it were, in equilibrio, without acting on the centre or axis of suspension. But if the body be moving freely then the C. of P. is that point in it at which its whole impetus is supposed to be concentrated. In this case, if the body struck with its C of P. an immovable obstacle, and if it were perfectly rigid and inelastic, it would come to perfect repose; whereas, if it struck the obstacle with any other point a rotary motion would be produced in it. When the body is moving freely and there is no rotatory motion, the C. of P. coincides with the centre of gravity. If the body be moving round a point or axis of suspension, the C. of P. coincides with the centre of oscillation. The more complicated case of a body rotating round an axis within it would require, for its explanation, analytical formulae which cannot conveniently be translated into ordinary language. There are many positions which the axis may have in which there will be no C. of P.—i.e., there will be no direction in which an impulse could be applied without producing a shock upon the axis. One case of this sort is that of the axis being a principal axis through the center of gravity.

CEN'TRE OF PRES'SURE, of any surface immersed in a fluid: the point in which the resultant of the pressures of the fluid on the several points meets the surface. When the bottom of a vessel containing fluid, or when a plane immersed in fluid, is horizontal, the pressure on every point of it is the same, being that due to the weight of the column of fluid standing above the bottom or plane. In either case the pressures at the different points obvious-

ly form a system of equal parallel forces, whose centre will be the centre of gravity of the bottom or plane, their resultant passing through this point being the sum of all their forces. But when the plane is inclined at any angle to the surface of the fluid, the pressure is not the same at all points, but is obviously greater at the lower than at the upper points, for the lower have to support taller columns of the fluid. The resultant of these forces, then, will not pass through the centre of gravity of the surface, but through a point below it. This point is the C. of P., and evidently will lie below the centre of gravity for all fluids in which the pressure increases with the depth. If the surface pressed upon form part of the containing vessel, and be supposed movable, it will be kept at rest by a pressure equal to the sum of the fluid pressures applied at the C. of P. and acting in the opposite direction. In the case of a vessel with a parallelogram for one side, the C. of P. is at the distance of one-third of the height from the bottom. In the case of a triangular vessel whose base is at the bottom, it is one-fourth of the height only.

CENTRIFUGAL, n. *sĕn-trĭf'ū-găl* [L. *centrum*, the centre; *fugĭō*, I flee]: tending to fly or go off from the centre (see CENTRAL FORCES): in bot., applied to that kind of inflorescence in plants in which the central flower opens first. CENTRIP'ETAL, a. *-trĭp'ĕ-tăl* [L. *pĕto*, I seek, I move to a place]: tending to the centre; having a desire to move to the centre (see CENTRAL FORCES): in *bot.*, applied to that kind of inflorescence in plants in which the flowers expand from below upward or from the circumference inward. CENTRIFUGAL FORCE, the force by which bodies, when set in motion round a centre, have a tendency to fly off at a tangent from the circle round which they move. CENTRIPETAL FORCE, the force which drives or impels a body toward some point as a centre; the force or gravity by which bodies tend to a point or centre.

CENTRIFUGAL AND CENTRIPETAL, *sĕn-trĭf'ū-gal, sĕn-trĭp'e-tal*, in Botany: two different kinds of inflorescence, or modes of flowering of plants. When the flower-bud which terminates the floral axis, and is central in the inflorescence, is the first to expand—in which case the others are developed in succession from the centre outward—the inflorescence is said to be *centrifugal*. When the outermost flowers expand first, the inflorescence is *centripetal*, as is the case in catkins, spikes, and racemes, in which the flowers nearest the base are the first to expand, and those nearest the apex the last. These modes of inflorescence are very characteristic of different plants, of genera, and of orders.

CENTRING: see CENTERING.

CENTROIDS, n. plu. *sĕn'troyds* [L. *centrum*, the middle point: Gr. *eidos*, resemblance]: the generating curves of such geometrical figures as cycloids and epicycloids.

CENTRUM, n. *sĕn'trum* [L. *centrum*, the centre]: in *anat.*, the body of a vertebra.

CENTUMVIRI, *sĕn-tŭm′vĭ-rī:* judges of ancient Rome, three from each tribe, who determined ordinary causes. The extent of their jurisdiction is uncertain. Hollweg (*Ueber die Competenz des Centumviralgerichts*) would confine it to civil cases: it seems probable that they at first handled questions relating to quiritian ownership, which determined the status of the citizens.

CENTUPLE, n. *sĕn′tū-pl* [F. *centuple*—from L. *centŭplus*, augmented a hundred-fold—from *centum*, a hundred; *plĭco*, I fold]: a hundred fold: V. to multiply a hundred-fold. CENTU′PLICATE, v. *-tū′plĭ-kāt*, to make a hundred-fold. CENTU′PLICATING, imp. CENTU′PLICATED, pp.

CENTURION, n. *sĕn-tū′rĭ-ŏn* [F. *centurion*—from L. *centūrĭōnem*—from *centum*, a hundred]: among the *anc. Romans*, a captain of infantry at first commanding 100 men, but later a number indefinite. These officers were chosen by the tribunes.

CENTURY, n. *sĕn′tū-rĭ* [F. *centurie*, a group of a hundred—from L. *centūria*, a century—from *centum*, a hundred]: a group or period of a hundred years. In anc. Rom. military organization *centuria* was a subdivision of the legion, and consisted of 100 foot-soldiers. Centuria was also a subdivision of the whole citizenship. CENTU′RIAL, a. *-rĭ-ăl*, pertaining to a century.

CENTURY PLANT: see AGAVE.

CEPHAËLIS: see IPECACUANHA.

CEPHALASPIS, n. *sĕf′ă-lăs′pĭs* CEPHALASPIDÆ, n. plu. *sēf-ă-lăs′pī-dē:* [Gr. *kephălē*, the head: *aspis*, a shield], genus of fossil ganoid fishes, of which six species have been described, two belonging to the upper Silurian, and four to the Devonian measures. The head was protected by a large ganoid plate, sculptured externally with circular radiating markings. Agassiz gave the name C. (buckler-headed) from this extraordinary covering, which has very much the appearance of, and was formerly supposed to be, the cephalic shield of an *Asaphus*. The body was covered with rhomboidal enamelled scales, and furnished with dorsal and pectoral fins; it terminated in a large heterocercal tail. In a graphic description of this fossil in his *Old Red Sandstone*, Miller thus sketches the general appearance of the animal: 'Has the reader ever seen a saddler's cutting knife—a tool with a crescent-shaped blade, and the handle fixed transversely in the centre of its concave side? In general outline, the C. resembled this tool; the crescent-shaped blade representing the head, the transverse handle the body.' The endo-skeleton was cartilaginous, retaining the notochord through life. The flexible body, assisted by the large tail and the fins, would give the C. the power of moving rapidly through the water. Being a predaceous fish it must have been a formidable enemy to its associates in the Palæozoic seas, for, besides its power of rapid motion, the sharp margin of its shield probably did the work of a vigorously-hurled javelin, as in

the sword-fish. This genus was originally named *Asterolepis* (star-scale), from the circular markings on its cephalic shield.

CEPHALATE, n.: a mollusk having a head.

CEPHALIC, a. *sē-făl′ĭk* [Gr. *kephălē*, the head]: pertaining to the head: N. a medicine for headache. CEPHALINE, n. *-sĕf′ă-lĭn*, a knitted woolen band passing round the head and over the ears, as a preservation against cold, worn by ladies. CEPHALALGIA, n. *sĕf′ă-lăl′jĭ-ă*, or CEPH′ALAL′GY, n. *-jĭ* [Gr. *algos*, pain]: pain in the head; headache. CEPH′ALAL′GIC, a. *-jĭk*, pertaining to.

CEPHALIZATION, *sĕf-a-lī-za′shŭn*, a principle advanced by Dana, who claims that cephalization is simply domination of the head—cephalic domination—in an animal, as manifested in the structure; and any degree of it depends on the grade or power of the cephalic centre and the degree of subordination to it in the structure. He agrees that since animals have a head as their grand characteristic feature, and a brain as the fundamental element of the head and the prime centre of force in the organism, exaltation and concentration anteriorly of the life-forces mark a high grade of cephalization. Their concentration of parts anteriorly, with exaltation of the cephalic end of the body, is manifested not merely in the transfer of members to the cephalic series, but also in the form and structure of the head, of the sense-organs, the mouth-appendages, the legs and abdominal appendages.

The principle is most clearly shown by the increased size and specialization of the head of the crab and the corresponding reduction of the abdomen as compared with the elongated abdomen of the lobster and shrimps as well as the relations of the head to the thoracic and abdominal regions in the amphipod and isopod *Crustacea*. It should be observed that in arthropods in general, at the beginning of embryonic life, development begins with the head, thus in *Limulus*, *Arachnida*, *Crustacea*, and insects, the head is the first to become developed; its segments and appendages arise before those of the hind body. It is so in the vertebrates, the head at first forming the bulk of the body. This is the case with annelid worms, etc., in their larva, the trochosphere (q.v.), the bulk of the body is formed by the head. It is not improbable that the cause of the large size of the head in the embryos of all the higher animals is in some way connected with the fact that development begins at the anterior end. On the other hand, the new segments later in embryonic life in worms and arthropods arise at the growing-zone, which is situated at the end of the hind body, between the penultimate and terminal segments of the body.

CEPHALO-BRANCHIATE, a. *sĕf′ă-lō-brăng′kĭ-āt* Gr. *kephălē*, the head; *branchiă*, a gill, carrying gills upon the head, as certain of the Annelida. CEPHALOID, a.

*sĕf'ăl-oyd* [Gr. *eidos*, resemblance]: in *bot.*, capitate or head-shaped.

CEPHALOCHORDA, *sĕf-a-lō-kôr'da*: a group of *Chordata* represented by the lancelet or Amphioxus (q.v.). Other names for the young group are *Leptocardii* and *Acrania*. The *Cephalochorda* are fish-like in shape, and have a notochord extending the length of the body, beginning in the head; hence the name *Cephalochorda*. The notochord is situated between the nervous system and the digestive canal. The central nervous system lies entirely on one side of the digestive canal, while numerous gill-slits extend from the pharynx to the exterior.

CEPHALODINE, a. *sĕf-ăl'ō-dĭn* [Gr. *kephălē*, the head; *eidos*, resemblance]: in *bot.*, forming a head.

CEPHALO-EXTRACTOR, n.: an instrument to extract the fetus by the head.

CEPHALONIA, or Cefalonia, *sĕf-a-lō'nĭ-â*, or *chĕf-a-lō'ne-â:* largest of the seven Ionian Islands (q.v.), at the entrance of the Gulf of Lepanto or Corinth, lat. 38° 3′—38° 30′ n., and long. 20° 21′—20° 49′ e. It is irregular in shape; greatest length about 30 m.; area 302 sq. m. Its surface is mountainous, the soil, for the most part, thin, and water very scarce. The inhabitants, however, are industrious and enterprising, and have planted vineyards wherever the grape will grow, and currants and olive-oil are also produced for export. The climate is warm and agreeable. The exports have an annual value of about $1,000,000, and the imports of about $1,250,000. The number of persons brought up to the medical profession is remarkable; it is said that there is hardly a town in the Levant which has not a practitioner from Cephalonia. The inhabitants are also much more energetic in foreign trade than those of Corfu or Zante. The island is subject to frequent but slight earthquakes. There was formerly a small English garrison at Cephalonia. Steamers ply between it and Malta, Patras, and Triest. The language spoken is a Greek dialect. The chief towns are Argostoli (q.v.) and Lixuri.

Cephalonia is called by Homer Same or Samos, and during the heroic ages was subject to Ulysses, whose residence was in the neighboring isle of Ithaca (q.v.). Later, Cephalonia appears under the name of Cephallenia. It successively fell into the hands of the Athenians, Romans, Byzantines, and Venetians, from the last of whom it was several times wrested by the Turks. On the ruin of the Venetian republic, 1797, it was seized by the French, who were in their turn dislodged by the Russians. In 1809, it came into the possession of England. It was ceded to Greece 1864. Pop. 72,800.

CEPHALOPHORA, n. plu. *sĕf'ăl-ŏf'ŏ-ră* [Gr. *kephălē*, the head; *phorĕō*, I bear, I carry]: a name for those mollusca which have a distinct head—more usual term is 'encephala.

CEPHALOPODA, n. plu. *sĕf′ăl-ŏp′ō-dă*, or CEPHALOPODS, n. plu. *sĕf′ăl-ō-pŏdz* [Gr. *kephălē*, the head; *podēs*, feet]: class of mollusks, highest in organization of that division of the animal kingdom. To this class belong the nautili, spirulæ, argonauts, poulpes, squids or calamaries, cuttle-fish, etc., of the present time, and the ammonites, belemnites, etc., of former geological periods. The cephalopoda all are marine, and only a few are capable of leaving the water, and moving about in search of food on the shore. CEPHALOPODOUS, a. *sĕf′ăl-ŏp′ŏ-dŭs*, pertaining to those animals which have the feet or arms arranged around the head, or the head between the body and the feet.

The cephalopoda receive their name from having organs of prehension and locomotion attached to the head, an arrangement toward which a gradual approach may be traced in the highest gasteropod (q.v.) mollusks. The organs have been variously designated *arms*, *feet*, and *tentacula*. They 'have no true homology' with the limbs of vertebrate animals, but are analogous to them in respect only of the purposes which they serve. The body of the cephalopoda is a bag formed of the *mantle* (see MOLLUSCA), open only at the end to which the head is attached. In some, this bag is almost spherical, and locomotion is accomplished only by the appendages of the head; in others, the body is elongated, and furnished with two fin-like expansions, which are the principal instruments of locomotion. In locomotion by the fins a cephalopod swims like a fish, with the head first, and often very rapidly; in locomotion by the arms it drags itself along, laying hold of any object within reach by means of suckers, with which the arms are furnished. Some cephalopoda are capable also of moving backward through the water by alternate contractions and expansions of a muscular web which unites the bases of the arms; some appear to depend for a similar power of swimming backward upon the forcible ejection of water from the 'funnel' below the eyes.

The head of a cephalopod is roundish, generally furnished with two large and prominent eyes, very similar in structure to those of vertebrate animals. There are also ears, but they consist merely of little cavities, one on each side of the brain, in each of which is suspended a membranous sac containing a small stone. The organs of smell are not very certainly known, but it appears that the cephalopoda possess this sense, as well as that of taste, of which the character of the tongue is much more indicative than in many vertebrate animals.—The brain forms a ring around the gullet. The whole nervous system is more complex than in the lower mollusks.—The mouth opens in the midst of the circle of arms. It is furnished with a strong, horny beak of two mandibles, moving vertically, not unlike the bill of a parrot, but

the upper mandible the shorter of the two.—The digestive apparatus is very complicated. The gullet swells out into a crop, and there is a gizzard as muscular as that of a bird. The intestine, after a few convolutions, terminates in the cavity which contains the gills, at the base of the funnel by which the water is ejected after having supplied air for respiration. This cavity is situated within the mantle or bag, and separated from the other viscera by a membranous partition. Into it the water is freely admitted by means of a slit or valvular opening, being drawn in by muscular action, and again expelled with considerable force through the funnel, which opens at the neck, and with its current all secretions, eggs, and excrements are carried forth. There are only two gills in the greater number of existing cephalopoda, the only exceptions being the two or three known species of *Nautilus*, which have four gills; and two-gilled cephalopoda—the order *Dibranchiata*—are in many respects of higher organization than the four-gilled—the order *Tetrabranchiata*—which, although containing so few recent, contains a vast number of fossil species. Each gill consists of many membranous plates, fixed to two sides of a stalk. —The heart in the *Tetrabranchiata* consists of a single ventricle only, but besides this *systemic* heart, the *Dibranchiata* have two *branchial* or *respiratory* hearts, contractile reservoirs, one for each gill, by which blood is forced into these organs.

The 'arms' or 'feet' are very numerous in the *Tetrabranchiata*, not provided with suckers, but hollow, and with long retractile tentacula; in the *Dibranchiata* they are only eight or ten in number, furnished with suckers (*acetabula*); two of them, when they are ten in number, being much longer than the rest, and differing from them in form. The suckers are admirably constructed—an adhesive disk of muscular membrane, often having a cartilaginous circlet, capable of most exact application to any object, with an aperture in the centre leading into a cavity, the bottom of which can be retracted like a piston so as to form a vacuum, and render the adhesion of the sucker close and firm, while on the muscular action being interrupted or reversed, it immediately lets go its hold. The Poulpe has each of its eight flexible arms crowded with 120 pair of such suckers, and as an animal of this kind exists on some tropical shores with arms about two ft. long it is not wonderful that it is reckoned dangerous. Still more formidable, however, are the Hook-squids of the South seas, the two long arms of which have suckers furnished in the centre with a hook to enter into the flesh of any creature of which they may lay hold, and so more effectually to secure their prey.

The sexes are distinct in all the cephalopoda. The eggs have a horny covering, and after their extrusion from the parent become agglutinated into masses of various forms. The young, from the first, very much resemble the mature animals except in size.

## CEPHALOPTERA.

All the *Dibranchiata* are provided with a peculiar organ of defense, called an 'ink-bag,' which is wanting in the *Tetrabranchiata*. This ink-bag is filled with a peculiar secretion, capable of being expelled at will to darken the water, and facilitate the escape of the cephalopod.

The tetrabranchiata cephalopoda have a chambered shell. See NAUTILUS. The dibranchiate cephalopoda have no external shell—the shell of the female Argonaut (q.v.) being scarcely an exception—but they have an internal shell (cuttle-fish bone, etc.), sometimes merely rudimentary, included between two folds of the mantle, and apparently intended to give support to the soft body of the animal.

The cephalopoda are very voracious, feeding on fish, mollusks, crustaceans, etc. Even a powerful crab is not safe from the attacks of a dibranchiate cephalopod little bigger than itself; the arms, so abundantly provided with suckers, seize it, and trammel every movement, while the parrot-like beak is strong enough to break the hard shell. Cuttle-fish and squids are often very troublesome to fishermen, following shoals of fish, and devouring great numbers of them after they are entangled in the net.

Fossil cephalopoda are in all the strata which form the earth's crust. The order *Tetrabranchiata* is almost exclusively a fossil order, being represented by not more than four recent species. With the exception of two genera, *Nautilus* and *Aturia*, this order is confined to primary and secondary rocks. The two groups into which it is divided also are characteristic of geological epochs. The *Nautilidæ*, with simple or gently undulating septa, and siphuncle central or in the inner margin, belong, with the exception of the two genera just now referred to, to the Palæozoic rocks. Including a small group, which, while it has the siphon on the external margin, has yet simple septa, the *Nautilidæ* are represented by 145 Silurian, 158 Devonian, and 91 Carboniferous species. The *Ammonitidæ* have the siphuncle always on the outer margin of the shell, and the septa with corrugated or lobed margins. This group, with the exception of *Goniatites*, a Palæozoic genus, is peculiar to, and co-extensive with, the secondary strata. Of the 930 species that have been described more than half belong to the genus *Ammonites* (q.v.).

The order *Dibranchiata* is found first in the Lias, and extends through the more recent strata, receiving its full development in the present seas. Scarcely 90 fossil species have been described, while more than double that number are known as recent animals. See AMMONITES: ARGONAUT: BELEMNITES: CALAMARY: CERATITES: CUTTLE-FISH: GONIATITES: HOOK-SQUID: NAUTILUS: OCTOPODA: ORTHOCERAS: POULPE: etc.

CEPHALOPTERA, *sĕf-a-lŏp'te-ra* [Gr. head-wing]: genus of cartilaginous fishes of the Ray family, type of a subfamily, *Cephalopteridæ*. The pectoral fins are very much elongated, so as to give great breadth to the fish. The tail

is slender and without fin, but armed near its origin with a great spine. The head is terminated in front by a straight line, and on each side of it there projects a membrane (*precephalic fin*) rolled upon itself, and resembling in shape a pointed horn. The name HORNED RAY has therefore sometimes been given to these creatures, of which only one species, *C. Giorna*, has ever been found on the British coasts.

It is not uncommon in the Mediterranean, and there acquires great size; one is mentioned as having been taken off Messina, which weighed 1,250 lbs.—more than half a ton. But this is small in comparison with the size of some of the *Cephalopteridæ* which occur in tropical seas: one taken at Barbadoes required seven yoke of oxen to draw it. They are very dangerous to swimmers and bathers.

CEPHALO-THORAX, n. *sĕf'ă-lō-thō'raks* [Gr. *kephălē*, the head; *thōrax*, the chest]: the anterior division of the body, composed of the coalesced head and chest, in many Crustaceæ and Arachnida.

CEPHALOTOMY, n. *sĕf-ăl-ŏt'ŏ-mĭ* [Gr. *kephălē*, the head; *tomē*, a cutting]: the art or operation of dissecting or opening the head.

CEPHALOTUS, n. *sĕf'ă-lō'tŭs* [Gr. *kephalōtŏs*, having a head or top—from *kephălē*, the head]: a genus of very singular dwarf pitcher-plants, having their leaves arranged in a rosette at the top of the rhizome, ord. *Cephălōtăcĕæ*.

CEPHEUS, *sē'fe-ŭs:* constellation of the n. hemisphere, containing, according to the Britannic catalogue, 35 stars; principal star, Alderamin, of the third magnitude.

CEPOLA: see BANDFISH.

CERAM, *sė-răm'*, Pg. *sā-râ'ōng*, or *sā-rowng:* island in the Moluccas archipelago; n. e. of Amboyna, between 2° 44′ 30″—3° 30′ 30″ s. lat., and 129° 30′—130° 53′ e. long.; divided into Great and Little Ceram by the Isthmus of Taruno. Area, 7,140 sq. m. Malays inhabit the coasts; Papuans the interior. A mountain chain runs through C., rising in Núsa Keli to 9,250 ft. The soil is very fertile. The vegetable products include timber-trees, rice, sago, maize, sugar-cane, bananas, and edible roots. The Malays fish. Exports are Ceram clothing, textiles, iron, copper-wire, earthenware, birds of paradise, trepang, sago, dried fish, edible nests, etc. Ceram belongs to the Netherlands. Pop. 195,000.

CERAMBYX, *sē-ram'biks:* Linnæan genus of coleopterous insects, included among those which, on account of the length of their antennæ, are usually known as LONG-HORNED BEETLES, and now generally regarded as the type of a tribe or family. To this tribe belongs the Musk Beetle of England (*Callichroma moschata*), remarkable for its strong and agreeable odor, which, however, is rather that of roses than of musk. Some foreign species have the odor of musk in great perfection. *C. heros*, one of the largest European beetles, extremely rare in Britain, deposits its eggs in a hole which it excavates for that purpose in the wood of the

oak; and the grub feeds upon the wood, excavating long passages through it.

CERAMIACEÆ, *sē-rā-mi-ā′sē-ē:* sub-order of Algæ (q.v.), called also FLORIDEÆ and consisting of sea-weeds of a rose or purplish color, with fronds formed of cells arranged in rows, sometimes in a single row; the *sporocarps* containing cells or *spores*, often in fours (*tetraspores*), with a transparent *perispore*, and inclosed in receptacles of very various form and structure. They are most abundant in the seas of the n. temperate zone. Many are very delicate and beautiful. A considerable number furnish agreeable articles of food of a gelatinous nature, as DULSE (q.v.), CARRAGEEN (q.v.), or IRISH MOSS, and certain species of PLOCARIA (q.v.), much used on the sea-coasts of the e. Indies. The edible swallows' nests of the East are supposed to be formed of a sea-weed of this sub-order, a species of *Gelidium*.

CERAMIC, a. *sē-răm′ĭk* [Gr. *kerămos*, potter's clay, earthenware]: pertaining to pottery, or to the department of plastic art which comprises all objects made of clay, such as cups, vases, bassi-rilievi, cornices, and the like. CERAMICS, n. plu. *sē-răm′ĭks*, the art or science of pottery.

CERAMICS, *se-ram′ĭks* [Gr. *kerăgmos*, potter's clay, *keramikós*, Fr. *ceramiques*]: The fictile arts collectively; the art or industry of making objects of clay, which are fixed into permanence by baking or burning. Is not applied to cementitious products derived from clay nor to the use of clays not involving the art of burning them. The term is a necessary general one because the principles involved in forming, burning, glazing, and coloring clay products are essentially similar in a great range of products, which modern needs are extending and varying widely, so that 'pottery' no longer covers the meaning.

All forms of pottery, that is to say, of containers made of clay and burned, from the common flower-pot up to the finest porcelain vases, are of course included in the term. But so also are the various products used in architecture, the refractory wares used in metallurgy and gas making, the pipes for land drainage and sewerage, the bricks and blocks for paving and the containers, worms, retorts, etc., essential for the chemical operations involving strongly corrosive substances. In short, the use of objects of burned clay is extending in all directions in the arts where it is necessary to oppose destruction by fire, the resistance to wear, the decay of time, and the action of powerful chemical agents.

The use of the object determines the character of the clay selected for fashioning it and the degree of its treatment by the fire, and likewise if it be essential to cover it with glass or glaze and ornament it with vitrifiable pigments.

The requirements of modern life have developed the porous agricultural drain tile and the vitrified electric conduit. Steel structure in building has made necessary terra cotta lumber and fire-proof floor arches, and archi-

tectural terra cotta for the exterior walls of fire-proof buildings. Modern sanitation and the heavy traffic of public buildings has produced floor and wall tile and ceramic mosaics. The enormous development of electrical power for manifold uses has created an entirely new industry in porcelain for the insulation of electrical conductors and apparatus.

CERASTES, *se-răs′tēz*, or HORNED VIPER: genus of serpents of the family *Viperidæ*, distinguished by a broad depressed heart-shaped head, the scales of which are similar to those of the back, and particularly remarkable for the development of one of the scales of each eyelid into a spine or horn, often of considerable length. The tail is very distinct from the body. This genus is exclusively African and very venomous. The best known species, *C. vulgaris*, the horned viper of n. Africa, was called cerastes by the ancients, the name being derived from the Greek *keras*, a horn. Other species of the same genus are *C. nasicornis* of the w. coast of Africa, and *C. caudalis* of the Cape of Good Hope.

CERATE, n. *sē′rāt* [L. *cera*, wax; It. *cero;* F. *cire*]: the melted honeycomb from which the honey has been pressed; a compound of wax with other oily and medicinal substances in such proportions as to have the consistence of an ointment (q.v.). Simple C. is made by melting together equal parts of white wax and olive-oil; they are heated together, and carefully stirred into a uniform substance while cooling. CERA′TED, a. covered with wax.

CERATIASIS, n. *sĕr′ă-tī′ă-sĭs* [Gr. *kĕras*, horn]: the growth of hard, horny tumors. CERATITIS, n. *sĕr′ă-tī′tĭs*, inflammation of the cornea.

CERATITES, n. plu. *sĕr′ă-tīts* [Gr. *kĕras*, a horn]: in *geol.*, genus of ammonitidæ, peculiar to, and characteristic of, the Trias; distinguished from the other members of the family by having the lobes of the sutures serrated, while the intervening curves, directed toward the aperture, are simple. Twenty-six species have been described. CERATODUS, n. *sē-răt′ō-dŭs* [Gr. *odous*, a tooth]: a genus of fossil fish-teeth; a singular genus of fish found fossil in the secondary rocks, and now found living in Queensland (see LEPIDOSIREN). CERATOSE, a. *sĕr′ă-tōs*, horny; having the texture and consistence of horn.

CERATIUM, n. *sĕ-rā′shĭ-ŭm* [Gr. *keratĭŏn*, a little horn, a pod]: in *bot.*, a long one-celled pericarp with two valves, containing many seeds.

CERBEREAN, n. *sēr-bē′ri-ăn*, [Cerberus]: like the three-headed canine guardian of the portals of Tartarus.

CERBERUS, n. *sėr′bĕ-rŭs* [L. *Cer′bĕrus;* Gr. *Kerberos*]: in Greek *mythology*, the many-headed dog of Pluto—offspring of Typhon and Echidna—who guarded the portal of the infernal regions. Later writers describe C. as only three-headed, with the tail and mane composed of serpents.

The poets sometimes encumber him with a hundred heads. A northern constellation, near the hand of Hercules, was named Cerberus by Hevelius.

CERCARIA, n. *sėr-kā′rĭ-ă* [Gr. *kerkos*, a tail]: a tadpole-shaped animalcule; the tailed larva of the liver-fluke, or distoma. CERCÆ, n. plu. *sėr′sē*, the feelers which project from behind in some insects. CERCARIIFORM, a. *sėr′kā-rī′ĭ-fawrm* [L. *forma*, shape]: tadpole-shaped like the larvæ of the liver-fluke.

CERCARIA, *sėr-kā′ri-a:* name formerly given to a supposed genus of *Entozoa*, at first, from their minute size, mistaken for *Infusoria*, but now known to be the young of *Trematode Worms*. In the form to which the name cercaria was given, these creatures consist of an oval body with a thread-like tail; and swim about with great activity in water, but exhibit a strong instinctive propensity to penetrate into the soft bodies of insect larvæ, which they

Cercaria Sacs:

1. A sac two lines long; *a*, oral cavity; *b*, ailmentary canal; *c*, a cercaria developed within the sac; *d*. sporulæ not yet developed into cercariæ. 2. The sac of a different species remarkable for its abdominal processes. 3. Another species, more simple in form and structure.

do by means of a spine-like weapon projecting from their head. The tail, as no longer needed, is now left behind, the closing of the wound through which the cercaria enters apparently nipping it off. Within the body which it enters, the cercaria loses also its spine, becomes encysted, and awaits its passive migration into an animal of higher kind, there to become a trematode worm. When it does not succeed in finding, in due time, a larva into which to enter, the cercaria gathers itself up into a ball; emits a mucous secretion, which soon hardens; and incessantly turning round within this mucous mass, becomes invested with a sort of shell, in which form it is not unlikely to be swallowed by some vertebrate animal. The cercaria is not the immediate offspring of a parent like itself. It is generated in a curious little animated sac (see figure, taken from Von Siebold's work on Tape and Cystic Worms), which is to be found buried among the organs of fresh water mollusks, and within which this development

of young takes place by gemmation. See GENERATIONS, ALTERNATION OF.

CERCELÉE, *sĕr-sė-lā*, or RECERCELÉE, *re-sĕr-sė-lā*, in Heraldry: a cross circling, or curling at the ends, like a ram's horn.

CER'CIS: see JUDAS' TREE.

CERCOCEBUS, *sėr-kō-sē'bŭs* [Gr., tail-ape]: genus of monkeys, natives of Asia and Africa, included by some naturalists in the large genus *Cercopithecus*. These monkeys have large cheek-pouches, large callosities, and long tails. The species commonly called MANGABEYS, or WHITE EYE-LID MONKEYS, are commonly referred to this genus, besides the CALLITHRIX, or GREEN MONKEY, and the MALBROUK, or DOG-TAILED BABOON.

CERCOPITHECUS, *sėr-kō-pĭ-thē'kŭs* [Gr., tail-ape]: a genus of monkeys, containing a large number of species, natives of Asia and Africa, chiefly of Africa. They are called *Guenons* by French naturalists, but they have no common English name more distinctive than monkey. They have cheek pouches and callosities, and a long but not prehensile tail. A MONA, or VARIED MONKEY (*C. Mona*) —an African species—in the Parisian menagerie, was remarkable not only for the cunning and adroitness with which it searched and rifled the pockets of visitors, but also for the readiness with which it applied a key to the opening of a lock, untied knots, undid the rings of a chain, and performed similar feats.

CERDOCYON, *sėr-dŏs'ĭ-on* [Gr., cunning-dog]: genus of *Canidæ*, apparently intermediate between true dogs and foxes, natives of S. America; called sometimes Aguara foxes. Their aspect is thoroughly vulpine, as are also their manners. Some of them add to the dispositions of ordinary foxes a singular propensity to steal and secrete brilliant or gaudy objects. A Brazilian species has been known to carry pocket-handkerchiefs into the woods. Some are natives of the coldest parts of S. America, and have a rich fur.

CERDONIANS, *sėr-dō'nĭ-anz:* sect of Gnostics (q.v.), named from Cerdo, their founder, a Syrian, who appeared in Rome abt. 140. They rejected the Old Test., and all the New Test. except parts of the writings of Luke and Paul.

CERE, v. *sēr* [L. *cera;* OF. *cere*, wax]: to cover with wax: N. the naked skin covering the base of the bill in some birds (see BILL). CE'RING, imp., spreading over with melted wax. CERED, pp. *-sērd.* CERE-CLOTH, n. *-klŏth*, and also CERE'MENT, n. *-mĕnt*, a cloth dipped in melted wax or some gummy matter, in which dead bodies were formerly wrapped. CEREOUS, a. *sē'rė-ŭs*, and CERA'CIOUS, a. *-rā'shŭs*, of or like wax; waxen. CE'RINE, n. *-rĭn*, the part of bees-wax soluble in boiling alcohol.

CEREA, *chā-rā'â:* town of n. Italy, about 19 m. s.s.e. of Verona; a straggling place, with the remains of an old

castle. The Austrians defeated the French here, 1798. Pop. 5,930.

CEREAL, a. *sē′rĭ-ăl* [L. *cerĕalis*, pertaining to Ceres or grain—from *Ceres* (q.v.), goddess of agriculture; It. and F. *céréale*]: pertaining to all kinds of grain used for food: N. one of the grain kind. CEREALIA, n. plu. *sē′rĕ-ā′lĭ-ă*, or CEREALS, n. plu. *sē′rĕ-ălz*, or CEREAL GRASSES, plants which produce grain or corn; in other words, all the species of grass (*Gramineæ*) cultivated for their seed as an article of food. They are called also CORN-PLANTS or BREAD-PLANTS. They belong to no particular tribes of the great order of grasses, but differ from each other botanically, perhaps as much as any plants within the limits of that order. The seeds of the grasses in general being indeed farinaceous and wholesome, the employment of particular species as bread-plants seems to have been determined chiefly by the superior size of the seed, or by the facility of procuring it in sufficient quantity, and of freeing it from its unedible envelopes. Some of the grains, as wheat and barley, are produced in ears or close-set spikes; some, as a few of those called millet, in spike-like panicles; others, as oats and rice, in very loose panicles. The form and size of the grains vary not a little, some being roundish, and some elongated; maize is the largest; many of the millets are very small. The plants themselves vary in size almost as much as their seeds, the millets being the smallest, and maize the largest of ordinary corn-plants. Buckwheat and spurry are sometimes ranked with the cereals, but incorrectly, if the term is regarded as having any botanical limits, for they are not grasses; though their seeds are used in the same way. The quinoa of S. America, and the kiery (*Amaranthus*) of India, with other plants of different orders, might be added to the list on the same account; even the lotus of the Nile, the *Victoria regia*, and other species of water-lilies might thus be reckoned as cereal plants. The most extensively cultivated grains are wheat (*Triticum*), barley (*Hordeum*), rye (*Secale*), oats (*Avena*), rice (*Oryza*), maize or Indian corn (*Zea*), different kinds of millet (*Setaria*, *Panicum*, *Paspalum*, *Pennisetum*, and *Penicillaria*), and durra or Guinea corn (*Sorghum* or *Andropogon*). These all have been cultivated from time immemorial, and there is great uncertainty as to the number of species to which the many existing varieties belong; their original forms and native countries cannot confidently be determined. Barley, oats, and rye are the grains of the coldest regions, the cultivation of the two former extending even within the Arctic circle. Wheat is next to these, and in the warmer regions of the temperate zone its cultivation is associated with that of maize and rice, which are extensively cultivated within the tropics. The millets belong to warm climates, and durra is tropical or sub-tropical. Rice is the food of a greater number of the human race than any other kind of grain. Maize has the greatest range of temperature.—Besides these, other grasses are cultivated for grain to some extent, in different parts of the world; a species of *Eleusine* (mand) in India, another (tocusso) in Abyssinia; a species of *Poa* (teff) in Abyssinia,

and a species of *Coix* (Job's tears) in India. Canary grass (*Phalaris*) also may be named. Canadian rice (*Zizania*) is used as a grain, but is scarcely cultivated, and the same remark applies to the manna grass (*Glyceria*) of n. Europe, to some species of bamboo (*Bambusa*), and to the sea lyme grass (*Elymus*), which affords an esteemed article of food, in small quantity, to the inhabitants of Iceland.

Of all the cereals, wheat is by common consent that of which the grain is best fitted for bread, though others are to some extent used for this purpose. But some, as rice and maize, are scarcely suited for it, and are prepared as food usually by other methods. All the grains are used also to produce some kind of fermented liquor or beer, and spirituous liquors are obtained from them by distillation. In agriculture cereals are usually considered as exhausting crops, partly on account of their trailing roots; their mode of nutrition, which is affected more by the roots than by the leaves; their slender stems, which allow weeds to grow up and rob the soil, and from the necessity of allowing them to attain full maturity before they are reaped. Accordingly it is considered one of the rules of good husbandry not to take two cereal or white crops in succession, but to make them alternate with root crops, which, growing in rows at some distance apart from each other, have the additional advantage of allowing weeds to be destroyed by means of repeated hoeings.

CEREBELLUM, n. *sĕr′ĕ-bĕl′lŭm* [L. *cĕrĕbel′lum*, a small or little brain: It. *cerebello*]: the hinder or lower part of the brain. CER′EBEL′LAR, a. *-lėr*, pertaining to the cerebellum: See CEREBRUM.

CEREBRATION, n. *sĕr′-ĕ-brā′shŭn* [L. *cĕrĕbrum*, the brain]: the action of the brain during any mental effort. UNCONSCIOUS CEREBRATION, that activity of the brain alleged to produce intellectual or emotional results independent of any conscious effort of the mind.

CER′EBRIN, *sĕr′ĕ-brĭn*: a name that has been applied, at different times and by different chemists, to various substances that are obtainable from the brain and other parts of the nervous system by extraction with alcohol. It is now usually applied to a white, crystalline, nitrogenous powder that is obtained by heating ox-brain with baryta, washing, drying, and finally extracting with alcohol. The cholesterin that is also present in the product so obtained may be removed by the action of ether, in which cerebrin is insoluble. Cerebrin does not combine with acids or bases, but by prolonged boiling with hydrochloric acid it is converted into a substance that can reduce Fehling's solution.

CEREBRO-SPINAL FLUID, *se-rē′brō-spī′nal:* fluid found in the *sub-arachnoid space*, an interval between the two innermost membranes of the brain and spinal cord—viz., the arachnoid and the pia mater. This space, narrow on the surface of the cerebral hemispheres, is comparatively

wide at the base of the brain between the two middle lobes of the cerebrum, and, posteriorly, between the hemispheres of the cerebellum and the medulla oblongata. The C. F. fills up the interval between the arachnoid and pia mater, and keeps the opposed surfaces of the former membrane (which is a closed serous sac) in contact. The C. F. is a clear, limpid, slightly-albuminous fluid, having a saltish taste, and a faintly alkaline reaction, and not containing more than 1.5 per cent. of solid matters. It varies in quantity from two to ten ounces, and is said to be most abundant in aged persons. Its chief use is to afford mechanical protection to the nervous centres, and to prevent the effects of external shocks or concussions.

CERE'BROSPINAL MENINGI'TIS: see MENINGITIS.

CEREBRUM, n. *sĕr'ĕ-brŭm* [L. *cĕrĕbrum*, the brain]: the brain proper; the front or larger brain. CER'EBRAL, a. *-brăl*, pertaining to the brain. CEREBRIC, a. *sē-rĕb'rĭk*, of or from the brain. CEREB'RIFORM, a. *-rĭ-fawrm* [L. *cĕrĕbrum; forma*, shape]: shaped like the brain. CEREBRIN, or CEREBRINE, n. *sĕr'ĕ-brĭn*, or CEREBRIC ACID, an organic acid of very complex composition, found in the liver, blood, and nerves, but especially in the brain of animals. CEREBRITIS, n. *sĕr'ĕ-brī'tĭs*, inflammation of the brain. CER'EBROID, a. *-broyd* [Gr. *eidos*, shape]: like or analogous to brain. CEREBRO-SPINAL, a. *-brō-spī'năl* [L. *spina*, the spine]: belonging to the brain and spinal cord.

CEREBRUM AND CEREBELLUM, *sĕr'e-brum*, or *sĕ-rē'brŭm, sĕr-e-bĕl'lŭm:* the two parts or regions of the brain. *Cerebrum* denotes the upper portion of the brain, while the under and posterior portion is called the *Cerebellum*, or little brain. For anatomical details see BRAIN.

CEREMENT, CERE-CLOTH: see under CERE.

CEREMONY, n. *sĕr'ĕ-mo-nĭe* [F. *cérémonie*—from L. *cæremōnĭă*, sacredness, reverence, a religious action or usage—fr. Cæres or Cære (see CERVETERÉ), probably a place of religious resort among the most ancient Romans]: pomp or state in religious rites; outward forms or rites in religion; formal rules or regulations; the customary rules and forms of social intercourse; state etiquette. CER'EMO'NIAL, a. *-mō'nĭ-ăl*, according to established forms or rites, as of the Jewish religion; ritual: N. outward form; a system of rites or rules established by authority. CER'EMO'NIALLY, ad. *-lĭ*. CEREMO'NIOUS, a. *-ŭs*, full of ceremony; formal; exact and precise. CER'EMO'NIOUSLY, ad. *-lĭ*. CER'EMO'NIOUSNESS, n. the practice of too much ceremony or formality. MASTER OF CEREMONIES, one who superintends and directs the forms and ceremonies to be observed on public or festive occasions.

CEREMONY, a religious form or usage; and indeed, almost any act, when performed in a regular, orderly, and formal manner, and when viewed, with reference, not to its object, but to the mode of its performance. The more entirely the attention of the performers

is withdrawn from the object of the act, and fixed upon the manner of its performance, the more *ceremonious* does it become. The purely formal character of ceremony is thus illustrated by Hooker: 'The name ceremony', he says, 'we do not use in so large a meaning as to bring sacraments within the compass and reach thereof, although things belonging to the outward form and seemly administration of them are contained in that name.' The remark is applicable to the most trivial ceremonies of social life and of state pageantry, as well as to the most sacred rites of religion; for a ceremony which is its own object would scarcely be entitled to be regarded even as a ceremony. The most empty display has always the ulterior object of imposing on somebody.

Ceremonies may be divided into four classes: (1) Religious; (2) Social; (3) State; (4) International.

For religious and state ceremonies see their respective titles:—for the first: Rites: Liturgy: Mass: Processions: etc.;—for the second: Coronation: Court: Court, Presentation at: Parliament: etc. For social ceremonies —see Etiquette: Precedency: Courtesy: Forms of Address: etc. For international ceremonies—see Diplomacy: Consul: Ambassador: etc.

CEREOPSIS, *sē-re-ŏp'sis* [Gr. wax-face]: genus of birds of the family *Anatidæ*, to which the New Holland goose (*C. Novæ Hollandiæ*) belongs. This bird has been known since the s. shores of that country were first visited by navigators. There, and on the adjacent islands, it is abundant; and the earlier navigators easily supplied themselves with fresh provisions by knocking the birds down with sticks, so little were they acquainted with the danger to be apprehended from man. The cere is remarkably large, whence the name.

CERES, *sē'rēz*, in Mythology: a goddess, among the Greeks named *Dēmēter*, daughter of *Chronos* (Saturn), by *Rhea* (Ops), sister of Jupiter, Neptune, Juno, etc. She had the misfortune, with her brothers and sister, to be devoured by her father, who, however, vomited her forth again after taking the emetic which Metis gave him. By her brother Jupiter she became the mother of Persephone or Proserpina (q.v.). The chief myth relating to Ceres tells how her daughter Proserpina was stolen by Pluto, and how the mother wandered far in quest of the maiden. After traveling in human form nine days, and everywhere distributing her gifts to mankind, she excited the pity of Jupiter, by whom Mercury was despatched to bring back Proserpina from the infernal world, but on the condition that she must spend there a third part (or, as others say, one-half) of every year. The myth of Ceres was symbolical of the growth of grain, which appears from under the ground; some consider that this is intimated in the name Demeter, which is thought to be equivalent to *ge meter*, 'Mother Earth.' The relations of the worship of Ceres with agriculture, social order, etc., were

expressed in her two great festivals, the *Eleusinia* (q.v.) and *Thesmophoria* (q.v.) Ceres was worshipped especially in Crete, Delos, Sicily, Asia Minor, Arcadia, Argolis, and Attica. Bulls, cows, pigs, honey-cakes, and fruits were offered to her. Among the Romans her festivals were styled CEREALIA; and of these the most interesting was the feast celebrated by the rural population shortly before harvest, when the country people, dressed in white, and crowned with oak-leaves, danced and sang harvest-songs in honor of the goddess. The feast in April lasted several days, and was celebrated by games of the circus. Ceres was represented usually in a chariot drawn by dragons, having her head crowned with a garland of corn-ears, and holding a torch, a basket, or a poppy in her hand.

CERES: one of the planetoids (q.v.), the first discovered. It was seen first by Piazzi at Palermo, 1801, Jan. 1. He continued to observe its motion till Feb. 13, when illness obliged him to discontinue his observations, which, however, enabled astronomers approximately to calculate its orbit. It was nearly a year before it again became visible, owing to its approach to the sun. Ceres's magnitude is less than that of the moon, and it looks like a star between the seventh and eighth magnitude.

CEREUS, *sē′rē-us:* genus of plants of the nat. ord. *Cacteæ* (q.v.) containing about 100 known species, among which are some of the most splendid flowers of that order. One of these is *C. speciosissimus*, now a common green house plant, cultivated sometimes even in windows. Its large flowers are of a fine scarlet color, the inner petals with a violet tinge: they spring singly from the younger branches. The fruit, when well ripened, is of a delicious flavor. The plant is a native of Mexico.

CERIFEROUS, a. *sĕ-rĭf′ėr-ŭs* [L. *cera*, wax; *fero*, I produce]: in *bot.*, bearing or producing wax. CEREOUS, a. *sēr′ĕ-ŭs*, like wax; waxen.

CERIGNOLA, *chā-rēn-yō′lâ:* town of Italy, province of Foggia, 23 m. s.e. of Foggia. It is divided into two parts—the old and new town, in the former of which a portion of the ancient walls remains—and it is celebrated for the decisive victory by the Spaniards over the French, 1503, which established the supremacy of Spain in Naples. C. has manufactures of linen, and a trade in cotton and fruits. Pop. 25,400.

CERIGO, *chĕr′ē-go:* one of the smaller of the seven Ionian Islands; now officially known again by its old Greek name *Cythera*. It is in the Mediterranean, separated from the coast of Morea by a narrow strait; area 107 sq. m., with a population est. at over 13,000. With the exception of a few tracts of land it is very barren, dry, and mountainous. In some parts, however, corn, wine, and olive-oil are raised. There are two great caverns in the island—one in the sea-cliff at the termination of the wild glen of Milopotamos; the other, known as the Cavern

of St. Sophia, from a small chapel at its mouth dedicated to this saint, is about one and a half hour's ride from Capsali (q.v.), capital of the island. The former cavern is said to be three m. in length, and so low that it is necessary to creep, in many places, on hands and knees to explore it. The latter—that of St. Sophia—is very remarkable and singularly beautiful, abounding in enormous stalactites of various shapes. In ancient times, Cerigo was sacred to Venus, being, according to the old mythology, the island that received this goddess when she arose from the sea.

CERINTHUS, *se-rĭn'thŭs* (abusively named MERINTHUS i. e., a halter): heretic who lived at the close of the apostolic age, but of whom we have nothing but uncertain and confused accounts. It is said that he was a Jew by birth, and studied philosophy in Alexandria. From Egypt he passed into Asia Minor, and lived in Ephesus contemporaneously (according to the belief of the church) with the aged apostle John. Tradition tells us that John held the heretic in such detestation that, on a certain occasion, when he encountered Cerinthus in the baths of Ephesus, he immediately left the place, saying to those about him: 'Let us flee home, lest the bath should fall while Cerinthus is within.' It was believed in the ancient church that the Gospel by the apostle John was written in opposition to the tenets of Cerinthus; and the Roman presbyter Caius (about the close of the 2d c.) supposed that Cerinthus had revenged himself by falsely ascribing the authorship of the Apocalypse to St. John—it being in reality his own work! The fathers contradict one another in their accounts of Cerinthus. Some describe him as a complete Gnostic, in which case he would be the earliest recorded teacher of that sect; others say that he held coarse and sensual millenarian views, making the *millennium* (q.v.), with the licentious fancy of an Arab, consist chiefly in 'nuptial delights;' and that he believed the Jewish ceremonial law to be in part binding upon Christians. There can be no doubt that Cerinthus made use of the Jewish law at least as a symbol for his Gnostic doctrines, and also employed millenarian terms in a symbolical manner; a very natural thing for him to do, on the hypothesis which Neander and others have suggested—that Gnosticism originated, not among the minds which had received a true Hellenic culture, but among the Judaizing sects, whose theosophy was a jumble of the spiritual and the material. Cerinthus being the oldest teacher of Judaico-Gnostic principles, there would naturally be a greater incongruity and want of harmony in his language and ideas than characterized Gnosticism at a later period of its development; and subsequent ecclesiastical writers, destitute as all of them were of precise historical knowledge and sound principles of criticism, could hardly avoid misunderstanding his system which is not consistent throughout, but bears marks of being formed in a transi-

tion epoch. See Paulus (1799); Herzog's *Realencyklopädie* (new ed.); and the church histories.

CERISE, n. *sĕ-rēs′* [F. *cerise*, a cherry—from L. *cĕrăsum*, a cherry]: a very fine shade of cherry or rose color, used in dyeing silks, etc., and artificial flowers; ADJ. of a cherry-red color.

CERITHIUM, *sē-rĭth′ĭ-ŭm* [Gr. *kerătĭôn*, a small horn—from *kĕras*, a horn]: genus, the type of a family, *Cerithiadæ*, of gasteropodous mollusca of the order *Pectinibranchiata* of Cuvier. The shell is spiral, elongated, and many whorled, with an oval oblique aperture which has a short canal in front. The species of this family are numerous, most of them marine, but many inhabiting estuaries and brackish rather than salt water; some are found in lakes and rivers. A few belong to temperate climates, but most of them are tropical, and in mangrove swamps they abound. The fossil species are very numerous, almost all limited to the tertiary formations: see BAGSHOT BEDS

CERIUM, n. *sē′rĭ-ŭm* [from the planet *Ceres*]: a metallic element the oxide of which was discovered and recognized as a new substance in 1803 by Klaproth, and, independently, by Berzelius and Hisinger. It was named for the minor planet Ceres, which was also discovered at about the same time. The principal source of cerium is the mineral monazite (q.v.), which is a silicate of cerium and certain other allied elements. Cerium forms a basic nitrate that is insoluble in water, and this fact affords a ready means of separating the metal from the other elements with which it is almost invariably associated. Metallic cerium may be obtained by electrolysis of the anhydrous chloride, or by melting the anhydrous chloride with metallic sodium. Thus prepared, cerium is a steel-gray metal, ductile and malleable, and melting at a temperature probably not far from the melting-point of silver. Its chemical symbol is Ce, and its atomic weight is 140 if O = 16, and 139 if H = 1. It has a specific gravity of from 6.6 to 6.75, and a specific heat of about 0.0448. It does not change in dry air, but in moist air it oxidizes superficially. It decomposes cold water slowly, and hot water quickly. Two oxides of the metal certainly exist, one having the formula $Ce_2O_3$, and the other the formula $CeO_2$. Three other oxides have also been described, with the formulæ $CeO_3$, $Ce_2O_5$, and $Ce_4O_9$; of these the first probably exists, but the other two still need confirmation. Oxide of cerium is also used in the manufacture of the better grades of incandescent gas-mantles. A fabric of cotton is woven of the desired form, and this is impregnated by repeated dipping in a solution of the nitrates of cerium and thorium. On ignition the cotton burns away, and the nitrates are converted into oxides, which give the intense luminosity desired. A mixtures of 99 per cent of thorium oxide to 1 of cerium oxide give the best results.

In medicine the insoluble salts of cerium are used, cerium oxalate alone being officinal. It resembles the insoluble bismuth compounds in its action, being a sedative to mucous membranes, and it is much used as an antemetic, particularly in the nausea of pregnancy. The soluble salts of cerium are poisons, their action being similar to the soluble salts of bismuth.

CERNUOUS, a. *sėr'nū-ŭs* [L. *cernŭus*, bending or stooping with the head to the ground]: in *bot.*, pendulous; nodding.

CEROGRAPHY, n. *sē-rŏg'ră-fĭ* [L. *cera*, wax: Gr. *graphē*, a writing]: the art of engraving on a waxed copper plate.

CEROMA, n. *se-rō'ma* [L. *ceroma;* Gr. *kērōma*, ointment for athletes; *kēroō*, I anoint, I wax over; *keros*, wax]: that part of the ancient gymnasia and baths in which the athletes used to anoint themselves.

CEROON, n. *sē-rôn'* [Sp. *seron*—from *sera*, a large basket]: a bale or package in skins or hides.

CEROPLASTIC, n. *sē'rō-plăs'tĭk* [L. *cera*, wax; Gr. *plassein*, to form]: the art of modelling in wax: ADJ. modelled in wax: see WAX-WORK.

CEROSINE, n. *sĕr'ō-sĭn* [L. *cera*, wax]: a waxy substance found on the surface of the sugar-cane.

CEROSTROTUM, *sē-ro-strō'tŭm*, or CESTROTUM, *sē-strō'-tŭm* [L.]: species of encaustic painting upon horn or ivory, the lines of the design being burned in with the *cestrum* or burning needle, and wax introduced in the furrows thus made.

CEROX'YLON, see WAX PALM.

CERRIAL, a. *sĕr'ĭ-ăl* [L. *cerrus*, a species of oak]: in *OE.*, relating to the bitter oak or cerrus. CERRUS, n. *sĕr'ŭs*, or CERRIS, n. *sĕr'ĭs*, the ancient name for the *Quercus cerris*, or bitter oak.

CERRO, *sĕr'rō* [Sp.]: meaning height, mountain, forming part in the names of several places in Spanish America.

CERRO DE PASCO: see PASCO.

CERRO GORDO, *thĕr'rō 'gōr'dō*, or *sĕr'rō gôr'dō* ('Big Hill'), a famous mountain pass in Mexico, the scene in 1847, April 18, of one of the sharpest battles of the Mexican war. After the capture of Vera Cruz on the coast, Gen. Scott moved northwest toward the City of Mexico, along the National Road. Some 50 miles from Vera Cruz this leaves the steaming lowlands and climbs a steep rocky plateau, an eastern spur of the great mountain range, seamed with ravines and thick with chaparral, and pierced by the defile of the little Rio del Plan. To this defile the road, after crossing it and leaving it by a loop to the north among the mountains, returns at a ravine separating a sharp rocky ridge called Atalaya from a coni-

cal eminence termed Telegraph Hill. West of this again is the small hamlet called Cerro Gordo, which gives its name to the pass. On April 9, Santa Anna began fortifying Telegraph Hill, and from the 12th pushed on the work with all his force; accumulating about 12,000 men, the bulk at Cerro Gordo, but neglecting to occupy Atalaya. On the 11th, Scott's vanguard under Twiggs and Harney came up to Rio del Plan at the foot of the plateau, where the road crosses the river, drove away a few Mexican lancers, established a camp, and began reconnaissances. Santa Anna, in place of attacking the scattered detachments, confided in his strong position, and the lowland fevers which must force the Americans to fight him, and waited. By the 17th most of Scott's forces had come up; and he pushed Twiggs forward within easy striking distance. The latter, finding Atalaya undefended, occupied it just as a Mexican detachment advanced to do so, routed them, and chased them in headlong flight half way up Telegraph Hill. The whole American army, about 8,500, being now at hand, Scott issued orders for a general advance next day. Santa Anna's line extended from Telegraph Hill to a road at the ravine, and eastward for a mile along the heights overlooking the National Road, which end in a precipitous rocky bluff 100 feet high; then back over three ridges terminating in rocky knolls, to the river defile. In front of the batteries and infantry the chaparral had been cut down and piled into an abattis for several hundred feet. The Americans, on the other hand, planted powerful batteries on Atalaya, and enfiladed the Mexican right with a howitzer across the river. Scott's plan was simple, but brilliantly effective, though the impassable ground made it fall short of the full intention. Since the Mexicans expected the chief attack on their right, he resolved to make only a feint there and assuming that they expected him to move forward along the road resolved not to do so. In the meantime he ordered the roads cleared around the hills to the north in order that by making a circuit to the National Road in the rear of the Mexicans he might cut off their retreat. On the morning of the 18th Pillow assailed the right; the artillery on Atalaya rained shot and shell with terrific effect on Telegraph Hill, the road batteries, Santa Anna's camp, and even his reserves, and the howitzer over the river added its discharge. Twiggs, Shields, and Worth, with Riley, then moved along the circuit till on the north flank of Telegraph Hill, at first out of sight, then in full range of the Mexican fire. Santa Anna detached part of the forces on Telegraph Hill to drive them back; then Harney from Atalaya swept over the crest and down the side, up Telegraph Hill till within 200 feet of the batteries and below their range. There he reformed and in one final charge utterly routed the Mexicans, at the same time turning the forces on the hill

against the main body of Mexicans at Cerro Gordo. The entire right, its retreat cut off, threw down its arms and surrendered. The main body broke up in a panic as the fugitives from Telegraph Hill rushed among them and the guns from that quarter cut them down, and fled wildly down the craggy slopes and to the defile, and westward along the road. The Mexicans lost 1,000 or 1,200 in killed and wounded; about 3,000 prisoners, including five generals, and 299 other officers; 43 guns, and 3,500 small arms. The Americans lost 63 killed and 368 wounded.

CERTAIN, a. *sėr'tin* [F. *certaĭn*—from L. *certus*, sure: It. *certo*]: not doubtful; sure; that cannot be denied; unfailing; fixed or regular; particular. CER'TAINLY, ad. *-lĭ*, without doubt; without question; without failure. CER'TAINTY, n. *-tĭ*, a real state; exemption from doubt or failure. CER'TES, ad. *-tēz* [F. *certes*—from L. *cĕrtĕ*, undoubtedly]: assuredly; in truth.

CERTAINTY: (in Philosophy). The quality in a mental attitude or act of judgment of being fixed or sure as to truth. A fact or principle which is established as sure and unquestionable. A future event which must surely occur. The state of mind of one who is sure beyond doubt of the reality of a fact or of the truth of a principle.

In ordinary thought and in philosophy there are recognized several kinds and grades of certainty. Of these the most important are:—*Intuitive or Immediate C.*, founded on direct intuition or perception; *Demonstrative C.*, founded on demonstration or inference; *Moral C.*, not intuitive or demonstrable but sufficiently probable to give a reasonable basis for action. That I exist is to me an immediate certainty; that the earth revolves on its axis diurnally is a demonstrative certainty; that the institution of marriage will persist for some time is morally certain. The problem of the logical basis of certainty is very fundamental in philosophy. Briefly, the ultimate bases of certainty are two—(1) the immediate experience of a thinking being; (2) the systematic development of rational principles or truths that are either involved in, or may be logically inferred from, immediate experience. In any systematically grounded certainty, based on rational insight, both these elements are involved. See KNOWLEDGE; TRUTH.

CERTHIADÆ, *sėrth'ĭ-a-dē:* family of birds, generally placed in the great order *Insessores* or *Passerinæ*, and tribe *Tenuirostres*, though some naturalists have ranked them in the order *Scansores*. They live mostly on the trunks and branches of trees, feeding on insects which they find in the crevices of the bark; and many of them aid themselves by their stiff tail-feathers in retaining their position as they search for their food on the perpendicular stem. Their claws are long and sharp; the hind-toe is also elon-

gated, so that they can take firm hold of the bark or of a small branch; and many of them can pass around a horizontal branch; clinging to its under-surface with their backs to the ground. The bill of many is slender and curved; others, however, have a comparatively short and straight bill. The tongue is cartilaginous at the extremity, and so fitted to aid in seizing insect prey. The plumage is usually of dull and uniform color; but the birds are lively and active in their habits. The species are numerous and widely diffused; they are divided into a number of genera. All are small birds. The creepers (q.v.), forming the genus *Certhia,* are regarded as exhibiting the type of the family.

CERTIFICATE, *sėr-tĭf′i-kāt:* a written (usually in some sense official) testimony to a fact. Law recognizes certificates for various purposes: 1. Annual certificate of attorneys: see ATTORNEY. 2. Certificate of appointment of the creditors' assignees to a bankrupt's estate and effects. 3. Certificate of conformity of a bankrupt. 4. Certificate of counsel, to enable a pauper to litigate *in formâ pauperis.* 5. Certificate of the judges of the superior common-law courts at Westminster, England, which are of various kinds and for various purposes. 6. Certificate of registry of a ship; which is a copy of what is entered in the register of the ship in the books of the custom-house. This certificate is granted by the collector, comptroller, or principal officer of the customs at the port of registry, and delivered to the captain as a voucher of the character and privileges of the vessel.

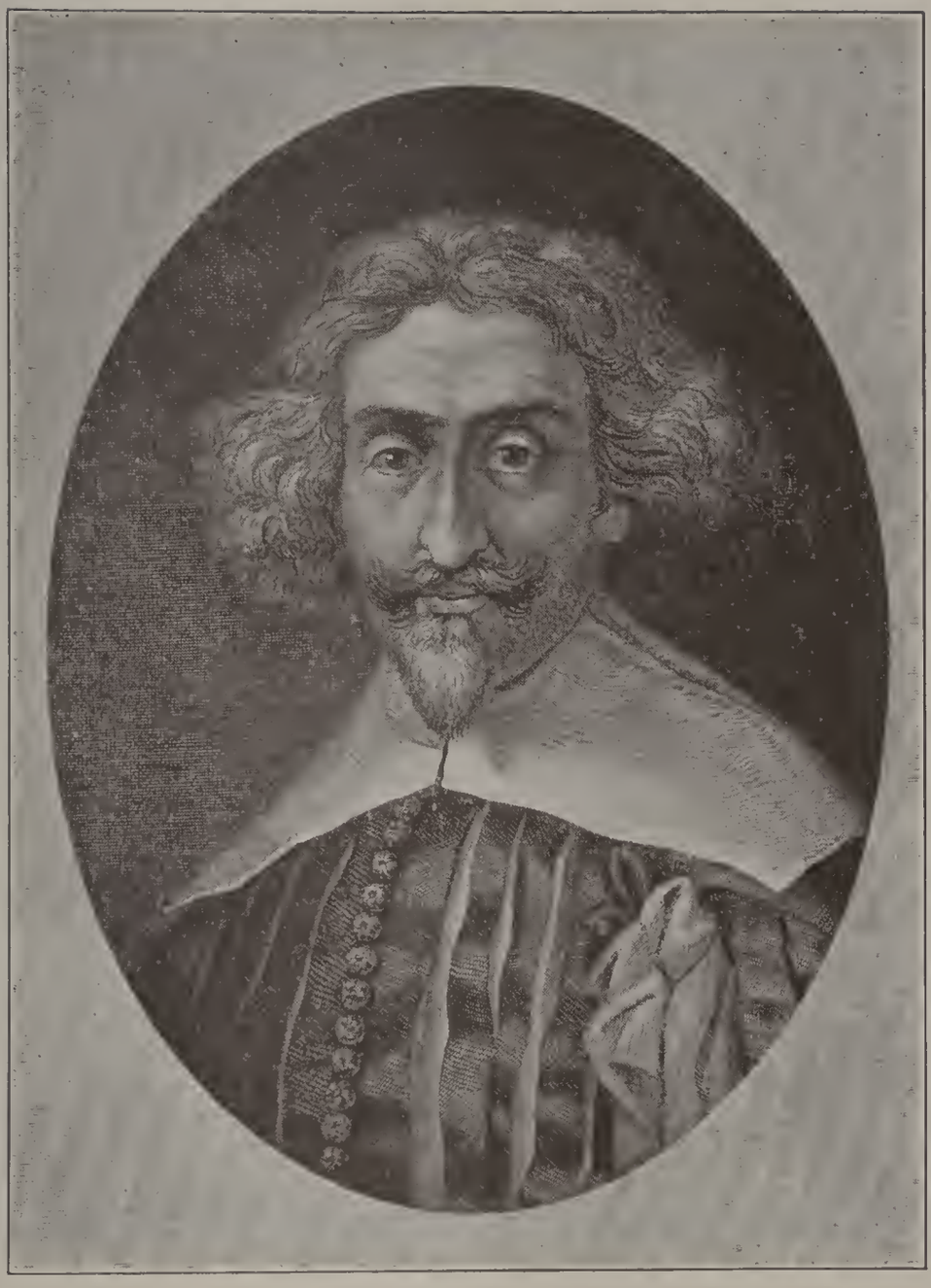
CER′TIFIED COPY: see EVIDENCE.

CERTIFY, v. *sėr′tĭ-fī* [F. *certifier,* to certify—from L. *certĭfĭcārĕ*—from L. *certus,* sure; *facĭō,* I make]: to testify to in writing; to declare or inform positively. CER′TIFYING, imp. CER′TIFIED, pp. *-fīd:* ADJ. testified to in writing assured. CER′TIFIER, n. *-fī-ėr,* one who. CERTIF′ICATE, n. *-tĭf′ĭ-kāt* [F. *certificat*—from L. *certif′ĭcātus*]: a declaration in writing to testify something; a testimonial of character: V. to give a status or position to by an authoritative written declaration. CERTIF′ICATING, imp. CERTIF′ICATED, pp.: ADJ. declared in writing to have a certain status. CERTIF′ICA′TION, n. *-kā′shŭn,* the act of certifying.

CERTIORARI, n. *sėr′shĭ-ō-rā′rī* [mid. L. *certĭorārĕ,* to certify—from L. *certĭor,* more certain]: writ issued from a superior court to an inferior court of record, demanding the transfer to the former of a cause pending; or calling for the record of a cause already adjudicated in the lower court; this legal process is equivalent to a Scotch advocation or appeal. Its object is that the party may obtain more sure and speedy justice, from such justices as shall be assigned to determine the cause. A writ of certiorari may be granted at the instance either of the prosecutor or of the defender; and issues at the discretion of the superior court.

CERVANTES SAAVEDRA, *sėr-văn′tĕz,* Sp. *thėr-vân′-tĕs sâ-vā′drâ,* MIGUEL DE: one of the greatest imaginative

writers of Spain: 1547, Oct. 9—1616, Apr. 23; b. at Alcala de Henares, of an old Galician family. He studied at Salamanca, and afterward at Madrid, where he was under the care of a learned theologian, Juan Lopez de Hoyos, prof. of belles lettres in the university. But his natural love of poetry led him to spend most of his time in writing elegies, ballads, sonnets, and a pastoral romance entitled *Filena*. When 22 years old, Cervantes served for some time as valet-de-chambre to Cardinal Guilio Aquaviva, of Rome. In 1570 he served as a volunteer under the command of the papal admiral, Marco Antonio Collonna, and fought gallantly against the Turks. At the battle of Lepanto, he was maimed for life by a gunshot wound in the left hand. He afterward took part in various campaigns. Captured by an Algerine squadron, he was made a slave, but was ransomed 1580, after four years' captivity. On his return to Spain he rejoined his regt. in the army sent by Philip II. to support his claims in Portugal, and distinguished himself in the expedition to the Azores. In 1584, he returned to Spain, and retired to private life, to devote his attention to literature. Soon after his publication of the pastoral romance, *Galatea* (1584), he married, commenced writing for the stage, and produced, in the course of a few years, as many as 30 dramatic pieces, of which the tragedy *Numancia* is the most remarkable. During 1588–99 he lived in straitened circumstances in Seville. In 1605 he once more appeared as an author, and now in a sphere exactly suited to his genius. In his immortal work, *Don Quixote*, Cervantes intended to put an end to that taste for extravagant romances of chivalry which had so long prevailed. The first part of this great satirical work appeared in Madrid, and was received at first coolly, but soon with loud applause, which, at a later period, was echoed from all parts of educated Europe. *Don Quixote*, though written with a satirical purpose, is throughout pervaded by the true spirit of poetry. With that universality which belongs to the highest genius, Cervantes connected a universal human interest with descriptions of local and temporary characteristics. He did not intend by his *Don Quixote* to burlesque the old Spanish knight-errantry, for, as Mr. Ford remarks (see *Handbook of Spain*, part i., p. 238), 'the thing had expired a century before his birth;' but to put an end to the absurd and affected romances which it was then the fashion to read, and which were believed to be true pictures of chivalry. He had also, it is quite clear, another object in view—viz., to show that the deeper and truer and more guileless a nature is the more will it become the jest and butt of real life; but he likewise teaches that the pure heart and high soul obtain a triumph which misfortunes and blunders cannot tarnish; for the knight, always 'disinterested, generous, elevated, and beneficent,' though 'the sweet bells of his



CERVANTES.

intellect are jangled and out of tune,' maintains throughout a hold on our affections and esteem. Charles Lamb has truly said, that readers who see nothing more than a burlesque in *Don Quixote* have but a shallow appreciation of the work.

Though received with enthusiasm, *Don Quixote* brought no pecuniary reward to the author. He was left in the obscurity and poverty in which he had passed so many years, and vainly endeavored to improve his circumstances. After silence during several years, Cervantes published his twelve *Novelas Examplares* (Exemplary Tales), 1613; his *Viage al Parnaso* (Journey to Parnassus), 1614—his next best production to *Don Quixote;* and in the following year he produced eight new dramas, but these were indifferently received. In 1614, a certain Alonso Fernandez de Avellaneda published at Tarragona a so-called continuation of *Don Quixote,* which was made a vehicle of abuse lavished on Cervantes. It appears that Cervantes suffered considerably under these despicable attacks; but he revenged himself in noble style by publishing (1615) the *true* continuation of *Don Quixote.* Near the close of his career, Cervantes found a patron in the Count of Lemos, who relieved his poverty. During the last few years of his life he resided in Madrid, where he died. No stone marks the spot where his remains were interred. His novel, *The Sorrows of Persiles and Sigismunda,* was posthumously published. In 1835, when the house in which the poet had lived in Madrid was rebuilt, a bust of Cervantes, by the sculptor Don Antonio Solá, was placed in the front.

CERVERA, *thĕr-vā'râ:* town of Spain, province of Barcelona, 28 m. e. of the city of Lerida. It is on an eminence, is surrounded by old walls pierced with nine gates, and the w. approach is commanded by a castle, now in a ruinous condition. The Univ. of Lérida was removed here by Philip V. but was afterward transferred to Barcelona. The university building, a massive but unsightly edifice, is still standing. Cervera has manufactures of linen, woolen, and cotton fabrics. Pop. 5,300.

CERVERA Y TOPETE, Pascual: a Spanish naval officer; b. 1833, of notable parents, was graduated at the Naval Academy of San Fernando. In 1851 he entered active service, and 1859 became 1st lieut.; was promoted captain 1868, and later admiral. He took an active part in the 10 years' war in Cuba, when he succeeded in blockading the ports and preventing the landing of filibusters. In 1898, after the outbreak of war with the United States, he was placed in command of the squadron ordered against the American fleet operating in Cuban waters. After crossing the Atlantic he sailed to Santiago de Cuba, where he took refuge in the inner harbor. On July 3, while seeking to escape in compliance with the orders of his superiors, his entire squadron was destroyed. During

the engagement the American fleet was under the official command of Rear-Admiral Sampson, but in the temporary absence of that officer, the actual command fell to Rear-Admiral Schley. The surviving officers of the Spanish vessels, including Admiral Cervera, were sent as prisoners to Annapolis, Md., and soon afterward were released and permitted to return to Spain. Cervera by his kindly disposition and genial manners won the greatest admiration from his captors. In 1903 he was appointed a life senator.

CERVETERE, *chĕr-vĕt'ā-rā*, or CERVETRI, *chĕr-vā'trē*: town of central Italy, 27 m. w. of Rome. Though now a place of only 700 or 800 inhabitants, it was formerly one of the most important cities of Etruria, possessing, it is said, a famous collection of paintings before even Rome was founded. After the Gallic occupation of the cap. Cervetere declined, and, 1250, its people mostly removed to the present village of Ceri. Many Etruscan remains of value have been found at Cervetere or Cære, which indeed seems to have had some connection with the religious rites of the early Romans: see CEREMONY.

CERVICAL, a. *sėr'vĭ-kăl*, or *sĕr-vī'kăl* [mid. L. *cervīcālis* pertaining to the neck—from *cervix*, the neck: F. *cervical;* It. *cervice*]: pertaining to the neck.

CER'VIDÆ AND CER'VUS: see DEER.

CERVIN, MONT, *mōng sėr-văng'* (Ger. *Matterhorn;* Ital. *Monte Silvio*): grand mountain mass of the Pennine Alps near Zermatt, in Switzerland, about 40 m. e.n.e. of Mont Blanc, and between the Valais in Switzerland and the Val d'Aosta in Piedmont. Above the glacier line, 11,000 ft. high, it rises in a bare obelisk of rock. It was long deemed inaccessible to the foot of man, and in spite of many resolute attempts it was not till 1865 that the summit was reached. Mr. Whymper's party of four made the ascent successfully in that year; but in descending three of the party and a guide fell over a precipice 4,000 ft. high. Since then the peak has been repeatedly scaled. The Col of Mont Cervin, used for horses in summer, is 10,938 ft. high.

CERVINE, a. *sėr'vīn* [L. *cervīnus*, belonging to a deer—from *cervus*, a deer]: pertaining to a stag or deer. CER'VINOUS, a. *-vĭ-nŭs*, dark, tawny, or deep yellow with much gray.

CERVIX, n. *sėr'vĭks* [L. the neck]: the back part of the neck; any part of an organ resembling a neck.

CESARE, *sē'zä-rĭ*, or *sā'särā* (a word without etymological meaning, but designed to have its letters symbolic): in logic, the first mode of the second figure of syllogisms. See SYLLOGISM AND MOOD in logic.

CESARI, *chā'zâ-rē*, GIUSEPPE (sometimes called GIUSEPPINO OR IL CAVALIERE D'ARPINO): 1570–1640 (or 42); b. Rome: painter. He was greatly honored by no less than

five popes, and his paintings were always highly popular. His works—in fresco and oil—show lively imagination, gay coloring, and great tact in execution, but are deficient in natural simplicity, correctness of design, symmetry of arrangement, and dignity of style. As he was the most brilliant of the mannerists, he was chief object of the attacks made by the artistic reformers, Caravaggio, the Caracci, and their followers—who constituted the *naturalisti*—on the conventional or pseudo-idealistic style of painting. C. died at Rome.

CESARIAN, or CESAREAN, a. *sē-zā′rĭ-ăn:* in *surg.*, the operation of taking a child from the womb by cutting—said to have been performed at the birth of *Cæsar;* hence the name.

CESARIAN OPERATION, *sē-zā′rĭ-an:* popular name, from very ancient times, for *Hysterotomy* [*hystera*, uterus; *tome*, section]. Pliny distinctly alludes to it in his *Natural History* (lib. vii. cap. ix.), saying that Cæsar was so called from being taken by excision out of the womb of his mother, and that such persons were called *Cæsones* (Cæsar a cæso matris utero dictus; quâ de causâ *Cæsones* appellati). In his case, the mother must have survived the operation, as Aurelia was alive when her son invaded Britain.

The first incision is made exactly in the middle line of the body, to the length of 6 or 7 inches. When the uterus is exposed, it must be carefully opened, the child lifted out and then the after-birth. The uterus now contracts, and sinks down into the pelvis, the wound is closed, and opium is given to the patient to allay pain and nervous irritability.

CESAROTTI, *chā-zâ-rot′tē*, MELCHIORE: 1730, May 15—1808, Nov. 3; b. Padua: Italian poet. He gained reputation by the vigor and orginality of his style, especially in his translation of Macpherson's *Ossian* (2 vols., Padua, 1763). The versification of this work, like that of Cesarotti's free translation of the *Iliad*, under the title of *La Morte di Ettore*, was admired by Alfieri. Cesarotti unquestionably threw fresh life into Italian literature, but the enthusiasm could not have been rational which led him to think poor Macpherson a better poet than Homer. Cesarotti's best work was his *Saggio sulla Filosofia delle Lingue* (Padua, 1785), in opposition to the academical pedantry of La Crusca. His prose style is vigorous, but full of innovations, especially Gallicisms.

CESENA, *chā-sā′nâ:* town of central Italy, about 12 m. s.e. of Forli, on the Emilian Way. It is pleasantly situated on a hill-slope washed by the Savio. Its principal buildings are the *Palazzo Pubblico*, the Capuchin Church, and the library founded by Domenico Malatesta Novello, 1452, with a rich collection of MSS. There are many monasteries and nunneries, as befits a place that gave birth to two popes—Pius VI. and VII. It has some silk factories, with a trade in wine and silk, and in the vicinity are productive sulphur-mines. Pop. 12,000.

CESPEDES, *thĕs-pā′thĕs*, or *ses′pā-dās*, Carlos Manuel de: 1819, Apr. 18—1874, Feb. 27; b. Bayamo, Cuba. He was educated at home and at the Univ. of Havana, admitted to the bar, travelled in Europe, killed a Spanish officer in a duel, and was involved with Gen. Prim in a conspiracy to overthrow the govt. Returning to Bayamo 1844, he gained an extensive practice and much influence, but his criticisms on the govt. and sympathy with Lopez and other revolutionists exposed him to suspicion and imprisonment, and forced him to remove to Manzanilla and afterward to Baracoa. He led the rising of 1868, freed the many slaves on his sugar estate, and on the field of Yara, Oct. 10, proclaimed Cuban independence. The republic was organized at Guimaro, 1869, and C. elected pres. by the Cortes, Apr. 10. Five years later he was killed by the Spaniards; the movement was officially declared to be ended 1878, Feb. 21.

CESPEDES, Pablo de: 1538–1608; b. Cordova, Spain. He was educated at Alcalá de Henares, studied art at Rome under Zucchero, and, after some futile proceedings against him by the Inquisition at Valladolid, became prebend of the cathedral at Cordova, 1577. Accomplished in many directions he was most eminent as a painter and poet. Some of his pictures remain at Seville and Madrid; the best is a *Last Supper* at Cordova. Of his poem on *The Art of Painting*, considered the best didactic verse in Spanish, some 600 lines were preserved by Pacheco, 1649.

CESPITOSE, *sĕs′pĭ-tōs*, or Cæs- [L. *cæspĭtem*, turf, a knot]: turfy; in *bot.*, applied to plants which are densely crowded in tuft-like patches; having their growth in tufts, as some common plants. Cæspitulose, a. *sĕs-pit′ū-lōs*, having the growth in numerous small tufts.

CESS, n. *sĕs* [corrupted from Eng. *assess;* mid. L. *cessus* for L. *census*, the rating of Roman citizens according to their property; F. *cens*, an annual quit-rent]: a permanent land-tax in Scotland; in *OE.*, rate or measure; the term has long been used in England as synonymous with the more modern noun *assessment.* Camden, in the time of Elizabeth, speaks of every man being 'cessed by the pole, man by man, according to the valuation of their goods and lands' (see Land tax): V. to rate. Ces′sing, imp. Cessed, pp. *sĕst.* Cessor, n. *-sĕs′ėr*, one who taxes or assesses. See Cessavit.

CESSA′TIO A DIVINIS: a prohibition of the Rom. Church which obliges the clergy to abstain from celebrating divine offices or giving church burial in some specified place. It is in some cases prescribed by the gen. law of the church, as when a church has been desecrated; but it may also be imposed on all who have power to inflict censure. It differs from an interdict in that it is particular, not general, and that while the former is a censure and inflicted to correct offenders it may be ordered

as an expression of the church's sorrow, to repair some injury done to the divine honor.

CESSATION, n. *sĕs-sā′shŭn* [F. *cessation*—from L. *cessātĭōnem*, an idling (see CEASE)]: a ceasing; a stopping; a rest; a pause.

CESSAVIT, *sĕs-sā′vĭt* [L. he has ceased—from *cesso*, I cease or stop]: a legal writ issued against a man who has ceased to pay rent or services for lands held by him, for two years together.

CESSIO BONORUM, *sĕsh′ĭ-ō bŏn-ō′rŭm* [L. *cessĭō*, a giving up, a surrender; *bona*, goods; *bonōrum*, of goods]: a surrender of goods or estate; a legal process in Scotland derived from Roman law, and in use also in various countries of continental Europe, by which a debtor obtains personal liberty and protection from imprisonment by his creditors, on making to them a full surrender of his goods or estate: see INSOLVENCY.

CESSION, n. *sĕs′shŭn* [F. *cession*—from L. *cessĭōnĕm*, a giving up: L. *cessus*, yielded, given way]: the act of giving way; a surrender of property, rights, or territory to another. CES′SIONAR′Y, a. *-ėr′ĭ*, having surrendered effects; yielding. CESSER, or CESSOR, n. *sĕs′sėr*, in *law*, a neglect to perform services or payment of rent for two years.

CESSPOOL, n. *sĕs′pôl* [mid. L. *secessus*, a latrine, a privy; Sp. *secéso*, excrement, stool; AS. *sesse*, a settle, a seat, and Eng. *pool*]: an excavation in the ground for the reception of foul water; a receptacle for liquid filth; a collection of offensive stagnant water. *Note.—Sus* or *sos* in prov. Eng. means hog-wash, a mixed or dirty mess, hence *cesspool*, is a mere corruption of *suspool;* comp. L. *sūs*, a hog—according to Skeat.

CES′TIUS, PYRAMID OF: Roman monument of the Augustan age, close to the Porto San Paolo, partly without and partly within the walls of Aurelian; in the immediate vicinity of the cemetery where Protestants dying in Rome are buried. The exterior form is perfectly preserved; but of the paintings which formerly decorated the internal walls only a few traces remain. Several copies of these paintings have been made, e.g., those edited by Falconieri, 1661. The pyramid is 125 ft. high, 100 ft. in width at the base; the walls 25 ft. thick. It is built of brick and tufa, faced with slabs of Carrara marble, now perfectly black with age, and rests on a base of travertine three ft. high. The interior contains burial chambers of considerable extent. The inner walls are covered with hard stucco, and the roof is vaulted. Both the walls and the roof were covered with paintings of female figures. The memory of the Caius Cestius, for whom this pyramid was built, has perished, but it has been supposed that he was the Cestius whom Cicero—in the oration *pro Flacco*—mentions as a rich man of business who, having no children, left a large sum of money for the erection of a monument to himself.

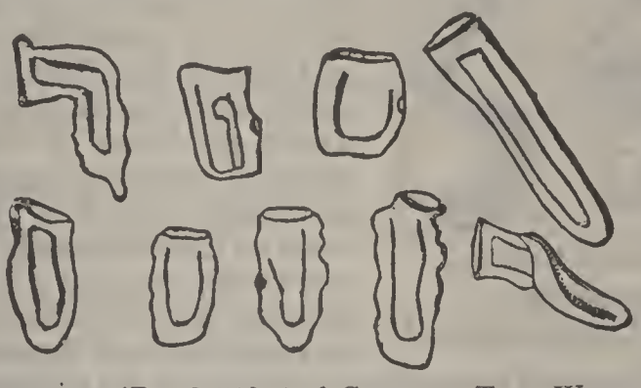
CESTOID, a. *sĕs'toyd* [Gr. *kestos*, a girdle; *eidos*, form]: like a girdle—applied to intestinal worms with long flat bodies, as the tape-worm. CESTOID WORMS, family of *Entozoa*, or intestinal worms, of the order *Cœlelmintha* (q.v.) consisting of tape-worms and other creatures which resemble them in structure and habits. The number of different kinds of cestoid worms is great. Their natural history is important in reference to the health of human beings and of the most valuable domesticated animals; and although the subject is not in all respects agreeable, it presents much that is interesting and wonderful. Recent discoveries have given it an entirely new character.

Cestoid worms, in their most perfect state, when alone they possess the form from which their name is derived, are in reality compound animals, like many zoophytes and ascidians. They do not however, like these, subsist by food entering the system through mouths with which the individuals composing it are furnished; for the joints of a cestoid worm, the individuals composing the system or 'colony,' have no mouth, nor is there any mouth in what is, on various accounts, quite properly regarded as the head, but nutriment is obtained from the surrounding medium by *endosmose* (q.v.); nourishing juices entering everywhere through the skin, as in the spongioles of the roots of plants, into the cellular tissue or *parenchyma* of which the whole body consists. The head of a cestoid worm is furnished with organs—different in different kinds—by which it affixes itself to the inner surface of the intestine of a vertebrate animal. When first it gets into this situation, the body is very short, and has no joints; but they soon begin to appear as transverse striæ, and gradually increasing in size, become in most of the kinds very distinct, and at last separate from the system in which they were produced, and are carried away out of the intestines of the animal which contained them. This does not take place, however, till they have not only become mature in their development of the sexual organs—the principal organs observable in them—but until they are full of what are called eggs, which, indeed, are rather young ones ready for a separate existence, each enveloped in a sort of protective shell. Each joint of a cestoid worm is androgynous. While the most matured joints are thrown off from the posterior end, new joints are continually formed, as at first, in the part nearest to the head. The number of joints thus formed from a single individual is very great, as will appear when it is considered that tape-worms have been found 20 feet long or upward, and that these have probably been throwing off joints in large numbers before opportunity has been obtained of measuring them.

As the cestoid worms have no mouth, so they have no alimentary canal. Some of them, as the true tape-worms, have been supposed to imbibe nourishment by the sucking disks of the head; but these are more probably mere organs of attachment, and the canals which are seen to arise behind them apparently belong, not to the digestive but to

the vascular system, and are united by transverse vessels or vascular rings in the head and in each of the segments. The only trace of a nervous system hitherto observed is a single ganglion in the head, which in some is seen to send off nerves to the suckers.

The division into segments remains imperfect in some cestoid worms. Those of the genus *Ligula*—chiefly found in birds and fishes—resemble a long flat ribbon, not even notched along the edge, and containing a mere series of hermaphrodite brood-places. When segmentation is perfect, the segments (*proglottides*), on separating from the parent system (*strobila*), possess life and a little power of independent motion, creeping away on moist ground, plants, etc. Their period of separate existence, however, is brief; they burst or decay, and the numerous minute embryos which they contain are ready to commence their career, if in any way transferred into the stomach of an animal of proper kind, which is generally different from that whose intestine their parent inhabited. This may happen by the embryos being swallowed—or even the *proglottis* itself—

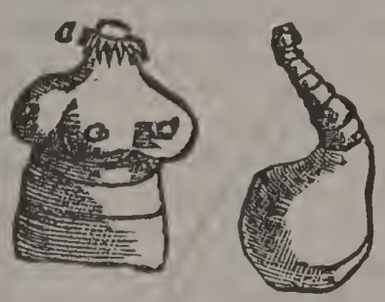


Segments (*Proglottides*) of Common Tape-Worm:
In different States of Expansion and Contraction.

together with water, grass, etc. Some of the cestoid worms in this embryo state find their appropriate place in the stomachs of vertebrate, and others in those of invertebrate animals.

The shell being broken or digested, the young cestoid worm is set free. It is extremely unlike the proglottis by which it was generated. It presents the appearance of a vesicle furnished with a few microscopic hooks. It has, however, a power of active migration by means of these hooks, and is able to perforate the stomach of the animal which contains it. To this its instinct seems immediately to prompt it, and it is so minute that it passes through the stomach without any serious inconvenience to the animal It now probably gets into the blood, and is lodged in some of the capillaries, from which it makes its way again by perforation, until it finds a suitable place in some of the tissues or of the serous cavities, in the flesh, or in such organs as the liver or the brain; and here relinquishing all active migration, it rapidly increases in size, at the same time developing a head, which is in fact that of a cestoid worm, and generally either encysts itself or is encysted—inclosed in a

*cyst* (q.v.)—according to circumstances, or according to its species. Great numbers of such parasites are sometimes present in a single animal, causing disease and even death. Until recently they were regarded by naturalists as constituting species and genera quite distinct from the cestoid worms, of which they are really the young; and the name *scolex*, formerly given to one of these supposed genera, has now become a common name for the young of all cestoid worms in this stage, as *larva* is the common name for the young of insects in their first stage after being hatched from the egg. Those scolices which inhabit vertebrate animals generally become distended with a watery fluid, and in this state were formerly regarded as hydatids (q.v.); little else, indeed, appearing without careful examination, but a small bag filled with fluid, the scolex head being formed within the bag, although capable of being everted from it, as the finger of a glove which has been drawn in at the end is turned out. Such is the young of the common tape-worm (*Tænia solium*), formerly known to naturalists as *Cysticercus cellulosæ*, and found in the flesh of the pig and of some other animals, and sometimes of man. It is this scolex, existing in great numbers, which produces in the pig the diseased state commonly known as *measly;* and it is very unsafe even to handle measly pork in a raw state, because a scolex accidentally getting into the mouth, and thence into the stomach, is likely to become a formidable inmate of the intestinal canal. It does not appear that this particular species has the power of multiplying in its scolex state, or the circumstances in which it exists in the flesh of the pig may be unfavorable to its so doing, and the prodigious numbers sometimes existing in a single animal have probably all entered by the mouth in the way already described, the contents of a single proglottis or joint of a tape-worm being perhaps sufficient to account for them; but some scolices, as that called *Cœnurus cerebralis*, found in the brain of sheep, and the cause of the disease called *staggers*—now known to be the scolex of a *Tænia* of the dog—are proliferous by a sort of pullulation, so that clusters of scolices cover the same parental vesicle. Until, however, this scolex reaches the intestine of an animal suited to it, its propagation is entirely unsexual, and no organs of sex exist; but no sooner is it there than it begins to develop itself into a cestoid worm, and to produce androgynous joints, fertile of new embryos, as already described. Thus we have in these creatures an instance, in its relations the most important instance known, of the recently discovered alternation of generations. See GENERATIONS, ALTERNATION OF. The transference of the scolex from its place of growth to that in which it becomes a cestoid worm,




Cysticercus Cellulosæ (magnified):
*a*, the head, much magnified.

usually if not always takes place by the animal which contains it being eaten by that whose intestine is suitable to its perfect development. Each kind of cestoid worm is limited to certain kinds of vertebrate animals, and it has been proved by experiment that if introduced into the stomach of other kinds the scolices soon die. The only cestoid worms which infest the human species are *Bothriocephalus* (q.v.) *latus*, and tape-worms (q.v.).

CESTRACION, *sĕs-trā′sĭ-on* or *sĕs-trā′shŭn:* genus of sharks, regarded as constituting a distinct family, *Cestraciontidæ*, though not more than two species are known as now existing. It is characterized by having two dorsal fins and one anal, the first dorsal situated over the space between the pectorals and ventrals; a spine forming the front of each dorsal; a short wide tail, with its upper lobe strongly notched beneath; the mouth at the fore-end of the snout; spout-holes distinctly visible, rather behind the eyes; eyes destitute of nictitating membrane; small gill openings; and the front of the mouth armed with sharp angular teeth, while the margins and inner surface of the jaws are covered with pavement-like teeth, presenting a general continuity of surface, as in skates, and disposed in rounded oblique scrolls—the former evidently adapted to the seizing of food, the latter to the crushing and bruising of it.

CESTRUM, *sĕs′trŭm:* style or spatula used by the ancients in encaustic painting in wax and ivory: see ENCAUSTIC.

CESTUI QUE TRUST, *sĕst-wē kėh trŭst:* in *law*, a person who possesses the equitable right to deal with property, the legal estate in which is vested in a trustee. There is such a confidence between the cestui que trust and his trusteė, that no action at law will lie between them, but they must settle their differences and arrange their disputes in a court of equity.

CESTUI QUE VIE: *sĕst-wē kėh vē:* in *law*, a person whose continuance of life decides thė duration of an estate.

CESTUS, n. *sĕs′tŭs* [L.—from Gr. *kestos*, a girdle embroidered]: the Venus or marriage girdle: a girdle worn by Greek and Roman women close under the breasts, and so distinguished from the *zone*, worn round the loins. The cestus of Venus was covered with alluring representations, so that Juno borrowed it when she desired to win the love of Jupiter.

CESTUS, or, more correctly, CÆSTUS [Lat. *cædere*, to slay]: name of the covering of the hands worn by Roman pugilists; a sort of boxing-glove. It was at first nothing more than a leathern thong or bandage to strengthen the fist; but afterward it was covered with knots and nails, and loaded with lead and iron, etc., to increase the force of the blow.

CESURA, n. *sĕ-zū′ră* [see CÆSURA: also Latham]: the pause which naturally occurs in reciting a line of poetry. CESURAL, a. *sĕ-zū′răl*, of or pertaining to a cesura.

CETACEA, *se-tā'se-a*, or *sē-tā'shē-a*: order of Mammalia (q.v.) greatly differing in general form and habits from the rest of that class, so as indeed to be popularly reckoned among fishes. The C. have a fish-like form, terminating in a fish-like tail or tail-fin, which, however, is not vertical, as in fishes, but horizontal, and is the great instrument of progression; being moved by very powerful muscles, commonly with an oblique downward and lateral movement, like that by which a boat is propelled in sculling, but sometimes by direct upward and downward strokes, when greater velocity is requisite. There are no hinder limbs, and even the pelvis is represented only by two small rudimentary bones, suspended in the soft parts, so that the body tapers gradually and uninterruptedly toward the tail. The fore-limbs are exclusively, or almost exclusively, adapted for swimming; their bones, however, appearing in the skeleton as those of a hand, placed at the extremity of an arm, of which the bones are much abbreviated and consolidated, with little power of motion except at the shoulder-joint, and are entirely concealed in the soft parts of the animal. The head is connected with the body without any apparent neck, and the vertebræ of the neck are partly anchylosed or soldered together. The skin is naked, having no general covering of hair, although some of the species possess conspicuous whiskers. The C. agree with quadrupeds, notwithstanding the great differences already indicated, in the most important parts of their organization. They are viviparous, and suckle their young, for which they exhibit great affection; they are also warm-blooded, breathe by lungs, and not by gills, and come to the surface of the water for the purpose of inhaling air. An approach to their fish-like form is to be seen in seals (q.v.) and other *Phocidæ* (q.v.), in which, however, the hinder limbs are largely, although peculiarly developed, while the fish-like tail-fin is lacking; the skin has a covering of hair; and the head and fore-limbs more resemble those of ordinary quadrupeds.

Tail-fin of Whale.

Bones of Fore-limb of Whale.

The C. are usually divided into two sections—*Herbivorous C.* and *Ordinary C;* but the former, constituting the family of *Manatidæ* (q.v.), have recently, by some systematic naturalists, been rejected from this order altogether, and made a separate order, *Sirenia*. They differ very widely from the ordinary or true C., not only in their adaptation for the use of vegetable instead of animal food,

which appears both in their dentition and in their digestive apparatus, but also in their pectoral instead of abdominal teats, and in their want of *blow-holes* and of any provision for retiring to great depths of the ocean, and remaining there for a considerable time without returning to the surface to breathe

The ordinary or true C. are divided into the families of *Delphinidæ* (dolphin, porpoise, beluga, bottlenose, narwhal, etc.), *Physeteridæ*, or *Catodontidæ* (cachalot, or spermaceti whale, etc), and *Balænidæ* (Greenland whale, rorqual, etc.), for the distinguishing characters of which, see the respective titles. They all feed on animal food some of them pursuing and devouring fishes; others, and these the largest, subsisting chiefly on smaller prey, mollusks, small crustaceans, and even zoophytes, which they strain out of the water by a peculiar apparatus in their mouths. None of the true C. have molar teeth or grinders like the *Manatidæ;* all the teeth which any of them have are conical; but some of the largest are entirely destitute of teeth. The females of all of them have the teats situated far back on the abdomen. The fore-limbs of the true C. are mere fins, the slight power of grasping with them, which *Manatidæ* possess, have entirely disappeared. The resemblance to fishes is increased in many of them by the presence of a dorsal fin. There is a wonderful provision to enable them to spend some time under water, before returning again to the surface to breathe—an arterial plexus or prodigious intertwining of branches of arteries, under the pleura and between the ribs, on each side of the spine. This being filled will oxygenated blood, after the animal has spent some time at the surface breathing, the wants of the system are supplied from it, while breathing is suspended, so that some whales can remain below even for an hour. The position of the nostrils is remarkable, almost on the very top of the head, so that the animal can breathe as soon as the head comes to the surface of the water; and the nostrils are furnished with a valve of singular but very perfect construction, a sort of conical stopper of fibrous substance, preventing the ingress of water even under the pressure of the greatest depths. The nostrils appear to be little used for the purpose of smelling, the sense of smell being one which these animals either do not possess at all, or in a very imperfect degree; but they are much used, not only for breathing, but also for *spouting*, or the ejection of water from the mouth, for which reason they are generally called *blow-holes*—the water being forced through them by the compression of two large pouches or reservoirs which are situated beneath them. This compression is accomplished by an action similar to that of swallowing; the throat, however, not being open, but closed. The height to which the water is thrown into the air is extraordinary, and the spouting of the whale is one of those wonders of the ocean never to be forgotten by those who have seen it.

A peculiarity in the skin of the true C. adapts them for their manner of life. The skin is extremely thick, the

inner part of it consisting of elastic fibres interlacing each other in every direction, the interstices of which are filled with oil, forming the substance usually called *blubber*. The oil deposited in this unusual situation, not only serves the ordinary purposes of fat, but that also of keeping the body warm, which to a warm-blooded animal, continually surrounded with water, is one of great importance; while the elasticity of this extraordinary skin affords protection in the great depths to which some of the whales descend, and in which the pressure must sometimes amount to a ton on every square inch.

The number of known species of C. is not great, but their natural history has as yet been very imperfectly studied. All of them are large animals, some of them by far the largest that now exist. Almost all—both herbivorous and ordinary—are marine, but some of the smaller species ascend large rivers to a great distance from the sea; and one, of the family *Delphinidæ*, belongs exclusively to fresh waters, being found only in the upper tributaries of the Amazon and the elevated lakes of Peru.

*Fossil Cetacea* have been discovered hitherto only in the Tertiary formation. Their remains represent species not only belonging to each of the recent families of true C., but have supplied materials for forming a new family intermediate between the true whales and the herbivorous cetacea. These fossils were originally described as reptiles; but they have been satisfactorily shown to be carnivorous C. by Owen, who, from their remarkable conjugate teeth, has given the typical genus the name of *Zeuglodon* (q.v.), and the family that of *Zeuglodontidæ*. In all, six or seven species have been described belonging to this family, from the Eocene and Miocene beds of Europe and America. The *Delphinidæ* appear first in the Miocene strata, and continue through the newer beds. The remains of a narwhal, which cannot be distinguished from the living species, have been found in several places in England. Of *Physeteridæ*, three species have been noticed in Pleiocene and Pleistocene strata, belonging to the recent genus *Physeter*. Fossil *Balænidæ* occur in the Miocene and newer beds. Only four species have been described, excluding *Cetotolites* (q.v.), a name given to teeth and ear-bones, belonging to animals of this family, which occur in great numbers in the Suffolk Crag.

CETACEOUS, a. *sē-tā′shŭs* [Gr. *kētos;* L. *cētus*, a whale-It. *ceto*]: pertaining to the whale kind. CETACEAN, n. *sē-tā′shĭ-ăn*, an animal of the whale kind. CETA′CEA, n. plue *-shĭ-ă*, or CETA′CEANS, n. plu. *-shĭ-ănz*, animals of the whal: kind. CETINE, n. *sē′tĭn*, the solid crystalline mass of spermaceti. CETIOSAURUS, n. *sē′shĭ-ō-saw′rŭs* [Gr. *sauros*, a lizard]: in *geol.*, a genus of marine saurians. CETOLOGY; n. *sē-tŏl′ō-jĭ* [Gr. *logos*, discourse]: the natural history of cetaceous animals.

CETERACH, n. *sĕt′ĕ-răk* [F. *cétérac;* It. *citracca*, spleenwort]: a genus of polypodaceous ferns, one species is the native fern, *Milt-waste* or *Scale-fern*.

CETINE, or CETIN, n. *sē′tĭn* [F. *cétine*—from L. *cetus*, a whale; Eng. suf. *-ine*]: the pure, solid, crystalline mass of spermaceti. It occurs in beautiful silvery scales.

CETOTOLITES, n. plu. *sē-tŏt′ō-līts* [Gr. *ketos*, a whale; *ota*, the ears; *lithos*, a stone]: name given by Owen to fossil cetacean teeth and ear-bones, which are found in great abundance in the Red Crag of Suffolk, England, a member of the pleiocene period. They are rubbed and water-worn, and they have evidently been washed out of some earlier strata, which remain yet unrecognized. The extent of these earlier strata must have been very great, seeing that the remains now extend over a large district in Essex and Suffolk, and attain a thickness in some places, of not less than 40 ft. Professor Henslow, 1843, drew the attention of agricultural chemists to this deposit, as a source of materials for manure, and since then superphosphate manures have been manufactured from it to the value of many thousand pounds annually, an example of the valuable practical results of a purely scientific discovery.

CETRARINE, n. *sĕt′rä-rĭn* [mod. L. *cetraria;* Eng. suf. *-ine*]: the bitter principle of the *Cetraria islandica*, or Iceland moss.

CETTE, *sĕt:* seaport town of France, dept. of Hérault; on a neck of land between the lagoon of Thau and the Mediterranean, in lat. 43° 24′ n., long. 3° 42′ e. The town, which is entered by a causeway raised above the Thau lagoon, and a bridge of 52 arches, is fortified, and the harbor is defended by a citadel and forts. The space inclosed by the piers and breakwater forming the harbor is about 30 acres, and has a depth of 16 to 19 ft. A broad, deep canal, lined with excellent quays, connects the port with the Lake of Thau, and so with the Canal du Midi and the Rhone, thus giving to Cette an extensive inland traffic; it has likewise an active foreign commerce. The principal trade is in wine, brandy, salt, dye-stuffs, perfumery, and verdigris. Cette has ship-building yards, and fisheries of oysters and anchovies. Pop. (1901) 33,246.

CETTIGNE, or CETINJÉ; see MONTENEGRO.

CEUTA, *sū′ta:* town belonging to Spain; in the kingdom of Fez, on the n. coast of Africa, opposite Gibraltar, lat. 35° 54′ n., long. 5° 16′ w. It is strongly fortified, and defended by a citadel and forts erected on Mount Hacho, the ancient *Abyla*, or south pillar of Hercules. It is the most important of the four Spanish *presidios*, or convict establishments, on this coast. The harbor is small and not very safe, and the population is composed of Spaniards, Moors, Negroes, Mulattoes, and Jews, mostly very poor. In 1899 a plan to strengthen the fortifications was abandoned on representations from England to the Spanish cabinet. Ceuta, formerly called *Septa* or *Septum*, was taken from the Vandals in 534 by Justinian, who fortified the place anew. In 618, it fell into the hands of the Western Goths; afterward it was taken by the Moors, who held

it until 1415, when it was captured by the Portuguese. It was annexed to Portugal, to the crown of Spain, 1580, and was the only place on the African coast retained by Spain when Portugal was restored to its independence in 1640. Pop. 13,000.

CEVA, *chā'vá:* town of Italy in the province of Cuneo, at the junction of the Cevetta and Tanaro rivers, 11 m. e. of Mondovi, 26 m. e. of Coni. It was formerly a place of much milit. importance, and is at the foot of a rock which was surmounted by a strong citadel. In the middle ages it was the centre of a separate marquisate; during the 16th and 17th centuries it was several times captured by the French and Spaniards; 1796 it was taken by Augereau; and 1800 it again fell into the hands of the French, who destroyed the castle. It has extensive iron-works and silk factories, and has a large trade in its cheese, which was famous even in the time of the Romans. Pop. 4,929.

CEVADIL'LA: see SABADILLA.

CEVENNES, *sā-vĕn'* (anc. *Cebenna*): chief mountain range in the s. of France. With its continuations and offsets, it forms the water-shed between the river-systems of the Rhone and the Garonne. Its general direction is from n.e. to s.w., commencing at the s. extremity of the Lyonnais mountains, and extending under different local names as far as the Canal du Midi, which divides it from the n. slopes of the Pyrenees. The central mass of the Cevennes lies in the depts. Lozère and Ardèche, Mont Lozère reaching an elevation of 4,884 ft., and Mont Mézen (the culminating point of the chain), 5,794. The average height is 3,000 to 4,000 ft. Their masses consist chiefly of amphibolic rocks, grauwacke, and limestone, covered with tertiary formations, which in many places are interrupted by volcanic rocks.

The Cevennes is celebrated as the arena of furious religious warfare. As early as the 12th c., the several sects known by the names the 'Poor of Lyon,' the *Albigenses* (q.v.), and the *Waldenses* (q.v.), were known and persecuted in this district. After the revocation of the edict of Nantes by Louis XIV., 1685, a series of cruel persecutions of the Protestants in the Cevennes began, especially in 1697, after the peace of Ryswick. 'Dragonnades' (q.v.) were employed to enforce the doctrines of the monks sent as missionaries into the heretical district. All persons suspected of Protestantism met with the most harsh and cruel treatment. Some of the inhabitants emigrated, others fled into the fastnesses of the mountains. Driven to desperation, the persecuted people at length rose to arms, and the murder of the Abbé du Chaila, who was at the head of the dragonnades, gave the signal of a general insurrection, 1702. The insurgent peasants were styled *Camisards* (q.v.)—possibly from *camise*, a smock worn by the peasantry. Headed by bold leaders, the most famous of whom were Cavalier and Roland, they defeated the troops sent against them by Louis again and again, until that king thought

the insurrection of sufficient importance to require the presence of the distinguished general, Marshal Villars; but he was recalled before the revolt had been put down, and it was left to the Duke of Berwick to extinguish it in blood; the contest terminating in an entire desolation of the province, and the destruction or banishment of a great portion of the inhabitants. The embers of religious hatred still remained glimmering through the following century, and, after the restoration of the Bourbons, 1815, burst out in flames in the terrible persecution of the Protestants in Nîmes (q.v.) and other places in the s. of France. See *Histoire des Troubles des Cevennes*, by Count de Gébelin (1760); Schulz's *Geschichte der Camisarden* (1790); Bray's *Revolt of the Protestants of the Cevennes* (1870).

CEYLON, *se-lon'* or *sĭl-ōn'* [the *Taprobane* of the Greeks and Romans, and the *Serendib* of the *Arabian Nights*): great island and a British colony in the Indian ocean, s.e. of the peninsula of Hindustan, from which it is separated by the Gulf of Manaar and Palk's strait. Recent observations have shown its true place to be between 5° 55′ and 9° 51′ n. lat., and 79° 42′ and 80° 55′ e. long. Extreme length from n. to s., from Point Palmyra to Dondera Head, 270 m.; greatest width, from Colombo to Sangemankande, 140 m. Area, including dependent islands, 25,364 sq. m., of which more than one-fifth is under cultivation. Pop. (1901) 3,578,333. For pop. of the various provinces, etc., see below (*population*).

*Physical Features.*—In natural scenery, Ceylon can vie with any part of the world; and as it comes into view rising from the ocean, clothed with the rich luxuriance of a tropical vegetation, it seems to the voyager like some enchanted island of eastern story. Its hills, 'draped with forests of perennial green,' tower grandly from height to height, till they are lost in clouds and mist. Near at hand, a sea of sapphire blue dashes against the battlemented rocks that stand at isolated points, and the yellow strands are shaded by groves of noble palms. In shape Ceylon resembles a pear, but its inhabitants more poetically compare it to one of their elongated pearls. Undulating plains cover about four parts of the island, and the fifth is occupied by the mountain-zone of the central s., which has an elevation of 6,000 to 8,000 ft. above the sea. Pedrotallagalla, the highest mountain in the range, attains the height of 8,280 ft.; the celebrated mountain of Adam's Peak, 7,420 ft.; and the table-land of Neuera Ellia, 6,210 ft.

*Geology.*—The mountain system is composed mainly of metamorphic rocks, chiefly gneiss, frequently broken up by intruded granite. With the exception of some local beds of dolomitic limestone the gneiss is everywhere the surface rock, and the soil is composed of its disintegrated materials. No fossils, as was to be expected, have been noticed in Ceylon, if we except the semi-fossil remains of mollusca, crustacea, and corals, belonging to living species, in the rude breccia of the n. in the neighborhood of the sea.

The n. part of the island is rising, and there also the land is making encroachments on the sea from another agency. The immense masses of corals continually increasing, retain the débris brought from the Indian continent by the currents of the sea, and thus form a flat, ever-increasing madrepore plain.

Of *metals and minerals*, iron in the form of a carbonate, can be obtained in great quantities, and of such purity as to resemble silver. Tin is found in the alluvium at the base of the mountains, and on the heights the rare metal tellurium has been discovered. Nickel and cobalt are scarce. Anthracite and rich veins of plumbago are on the southern range of hills. The *gems* of Ceylon have been celebrated from time immemorial, and they are most plentiful in the alluvial plains at the foot of the hills of Saffragam. sapphires, rubies, the oriental topaz, garnets, amethysts, cinnamon stone, and cat's-eye, are the principal gems and precious stones of the island. The most valuable is the sapphire; and one of these, found 1853, was worth more than $20,000. The value of the precious stones annually found in the island is estimated at $50,000. The pearl fisheries of Ceylon have long been famous, and since the beginning of the century are conducted directly for behoof of the government. But the fishing is intermittent. Thus there was no fishing from 1863 till 1874. When the pearl fishery is in existence it is confined to the Gulf of Manaar, where the oyster banks extend for 60 or 70 miles along the coast south of Manaar, and perhaps 10,000 people, including 2,500 divers, will assemble in the fishing season.

*Rivers.*—The most important river in Ceylon is the Mahawelli-ganga. It has its source in the vicinity of Adam's Peak, and after draining more than 4,000 sq. m., it separates into several branches, and enters the ocean near Trincomalee. The s. side of the island is watered by ten rivers of considerable size, which flow into the sea between Point de Galle and Manaar. On the e. coast the rivers are smaller, but still more numerous, and many others traverse the n. and e. provinces.

*Harbors.*—Point de Galle (q.v.) and Trincomalee (q.v.) are the two harbors of Ceylon. The former is small and dangerous; the latter is unsurpassed as a safe and commodius port. The variation of the tides is very small; the rise and fall not generally exceeding 18 to 24 inches, with a third of increase at spring-tides.

In *climate* Ceylon has a great advantage over the mainland of India, and as an island enjoys more equable temperature. The average for the year in Colombo (q.v.) is 80° in ordinary seasons. April is the hottest month; and in May the s. w. monsoon commences amid a deluge of rain, and continues the prevailing wind till Oct., when the n.e. monsoon sets in: 80 inches is the average annual fall of rain, though in an exceptional year, 120 inches have been registered. The beautiful tableland of Neuera Ellia, was visited by Europeans first 1826, and is now used as a sana-

torium. Here the thermometer in the shade never rises above 70°, while the average is 62°; the nights are cool and refreshing. The n. of the island, including the peninsula of Jaffna, the plains of Neuera Kalawa, and the Wanny, may be reckoned as a third climatic division. Here the annual fall of rain does not exceed 30 inches.

*Flora.*—The general botanical features of Ceylon especially of the lowlands, are nearly identical with those of s. India and the Deccan, though it possesses a few genera of plants not found in those regions. Its phænogamic plants are limited to about 3,000. The beautiful ixoras, erythrinas, buteas, Jonesias, and other flowering shrubs bloom in the forests. At an elevation of 6,500 ft., the acanthaceæ cover large tracts of ground, and the tree-fern reaches the height of 20 ft. On the highest ground, rhododendrons attain the size of timber-trees. The coral tree (*Eurythrina Indica*), the murutu (*Lagerstræmia Reginæ* and the *Jonesia asoca* are among the most magnificent of the flowering trees. The fig tribe are planted in the vicinity of the temples. In the forests, climbing-plants and epiphytes of prodigious size and striking appearance cover the trees with a mass of parasitical foliage of extraordinary growth. The palmaceæ are very conspicuous in the vegetation of Ceylon, although not more than 10 or 12 species are indigenous; the cocoa-palm—of which it is estimated there are not less than 20 millions of trees—the taliput, the palmyra—which forms extensive forests in the n. of the island—and the jaggery palm, are the most noteworthy. Of timber-trees, 416 varieties are known; the satin-wood holds first rank.

*Fauna.*—A knowledge of the fauna of Ceylon has been greatly advanced by the labors of Drs. Templeton and Kelaart and Mr. Edgar Layard. *Quadrumanous* animals are represented by the *Loris gracilis*, and five species of monkeys. Sixteen species of the *Cheiroptera*, or bat tribe, exist in Ceylon; and it is very remarkable that many of these rival the birds in the brilliancy of their colors. The *Pteropus Edwardsii* (the flying-fox of Europeans) measures from 4 to 5 ft. from tip to tip of its extended wings. Of the larger *Carnivora*, the bear and leopard; and of the smaller, the palm-cat and the glossy genette (the civet of Europeans may be mentioned. The dreaded tiger of India, the cheeta, the wolf, and the hyæna, are happily not met with in Ceylon. Deer, buffaloes, and the humped ox of India are among the *Ruminantia;* the little musk-deer (*Moschus meminna*) is less than two ft. in length. The *Pachydermata* are represented by the elephant and the wild boar; the former, usually tuskless, is emphatically lord of the forests of Ceylon. The most remarkable of the *Cetacea* is the dugong. Whales are captured off the coast. 320 species of *Birds* have been ascertained by Drs. Templeton and Kelaart and Mr. Layard. The song of the robin and long-tailed thrush, and the flute-like voice of the oriole, are heard over the whole mountain zone, and far down into the neighboring plains. There are also eagles, the beautiful peregrine falcon, owls, swallows, kingfishers, sun-birds, bulbuls, crows, parroquets, pigeons, pea-fowl, jungle-fowl and

many other of the feathered tribe. Myriads of aquatic birds and waders, among which the flamingo is conspicuous, cover the lakes and lagoons. The crocodile is the largest reptile in the island; tortoises and lizards also are found. There are a few species of venomous snakes, and of these the ticpolonga and the cobra da capello are the most deadly.

*Inhabitants.*—The Singhalese, most numerous of the natives of C., are descendants of those colonists from the valley of the Ganges who first settled in the island, B.C. 543. In their customs, costume, and general appearance, they have remained unchanged since the days of Ptolemy. The dress of the men, who have delicate features and slender limbs, is singularly effeminate, and consists of a *comboy* or waist-cloth, very much resembling a petticoat; their long hair, turned back from the forehead, is confined with combs, and earrings are worn as ornament. The women, in addition to the comboy, cover the upper part of the figure with a white muslin jacket, and adorn themselves with necklaces, bangles, rings, and jewelry. The Singhalese are false and cowardly, but show strong affection for their relatives. and reverence for old age. Polyandry still lingers in the interior of C., and was formerly universal; it is now, however, almost confined to the wealthier classes, among whom one woman has often three or four husbands. The Kandyans, or Highlanders, are a more sturdy race, and maintained their independence for three centuries after the conquest of the low country by European settlers. The Malabars, or Tamils, have sprung from those early invaders of C. who from time to time swept across from s. Hindustan, and contended with the Singhalese kings for the sovereignty of the island. They have formed the chief population of Jaffua for full 2,000 years, and constitutionally excel the Singhalese and Kandyans. The Moormen, most energetic and intelligent of the native communities, are met in every province as enterprising traders. They are a very distinct race from the Singhalese, but have no tradition of their origin. Europeans generally believe them to be of Arab descent, but Tennent is of opinion that 'they may be a remnant of the Persians, by whom the island was frequented in the fourth and fifth centuries.'

The 'burghers' of C. are a people of European descent, who have become naturalized. Those of Portuguese extraction hold the lowest place, and are mostly tradesmen and artisans; but the Dutch burghers frequently fill responsible posts, and are employed in the government offices.

Besides the races already alluded to, there is a remarkable tribe of outcasts—the Veddahs—hardly removed from the wild animals of the forest, and believed to be descended from the Yakkhos, the aboriginal inhabitants of the country. They occupy a district in the e. part of the island, and have there preserved their ancient customs and manner of living unaltered for more than 2,000 years. They appear to be without the instinct of worship, and the knowledge of a God. The tribe is divided into the *Rock Veddahs* and the *Village Veddahs*. The former hide themselves in the jungle, live by

the chase, and sleep in trees or caves. They use fire to cook their meat, and their greatest gastronomic treats are the iguana lizard and roasted monkey. Their language—if the few words they make use of can be called by that name—is a dialect of the Singhalese. The Village Veddahs locate themselves in the vicinity of the European settlements, on the e. coast, living in rude huts of mud and bark, and are hardly more civilized than their brethren of the jungles. The exertions of government to reclaim this harmless but degraded people have in some degree succeeded, and a promising colony has been formed.

*Population.*—Sir J. E. Tennet is of opinion that C., when in the height of its prosperity, must have been ten times as densely peopled as at the present day. At the censuses of 1891 and 1901 the figures for the nine provinces of Ceylon were as follows (military included):

| Provinces. | Area in sq. m. | Population. 1891. | Population. 1901. |
|---|---|---|---|
| Central | 2,304 | 472,609 | 623,011 |
| Uva | 3,725 | 159,889 | 192,072 |
| North Central | 4,047 | 74,606 | 79,110 |
| Western | 1,371 | 764,007 | 925,342 |
| Sabaragamuwa | 2,085 | 258,414 | 321,755 |
| Northwestern | 3,024 | 319,774 | 353,845 |
| Southern | 1,980 | 489,667 | 566,925 |
| Eastern | 3,657 | 149,610 | 174,288 |
| Northern | 3,171 | 319,633 | 341,985 |
| Total | 25,364 | 3,008,239 | 3,578,333* |

Europeans (1901) 9,583; Eurasians and Burghers, 23,312.

*Religion.*—The Singhalese are devoted to Buddhism (q.v.), which is the prevailing religion of the island. It does not exist, however, in that state of purity in which it is still found in the Indo-Chinese peninsula. Its sacred books are identical with those of Burmah and Siam, and both record the doctrines of Gautama in the Pali language; the deviations are in matters of practice. The Malabar kings adulterated Buddhism to a considerable extent with Brahmanism, introducing the worship of Hindu deities into the Buddhist temples, and this continues more or less. More than once have the Buddhists of C. sought to restore the purity of their faith—at one time sending deputies to Siam, at another to Burmah, with this purpose. The Burman or Amarapura sect have long been the reformers of Singhalese Buddhism, and maintain no very friendly relations with the party who, supported by the priests of Siam, acknowledge the civil power in matters of religion, sanction the worship of Hindu deities and the employment of the priesthood in secular occupations, uphold caste, and restrict the sacred books. Caste was acknowledged by the Singhalese prior to the introduction of Buddhism, which in principle is opposed to it; but so firmly was it rooted that it still endures, though

* Including 4,836 British and 17,866 whites of European descent. The total in 1871 was 2,405,287.

more as a social than a sacred institution. Gautama Buddha is said to have visited C. three different times to preach his doctrine, and his *Sri-pada*, or sacred footstep, on the summit of Adam's Peak (q.v.), still commands the homage of the faithful. Buddhism was not, however, permanently introduced into C. till B.C. 307, when Mahindo, obtaining the support of the king, established it as the national faith, The influence of the priests gradully increased, and, by the piety of the Singhalese kings, monasteries were richly endowed; for though the Buddhist monk individnally is forbidden to possess goods, a community may own property to any extent; and it is a remarkable fact that, at the present day, no less than one-third of the cultivated land of the island is computed to belong to the priesthood, and is exempt from taxation. The priests of C. are divided into two orders—the *Samanaros*, and those who, after a time of probation, receive the higher grade of *Upasampada*. The fraternity are not raised by education above their countrymen, and the respect paid them is directed more to the dress than to the person of the individual. Any member is at liberty to lay aside his ascetic character, and return to a secular life. The most celebrated Buddhistic relic in C. is the *Dalada*, or sacred tooth of Gautama, at Kandy,

The Gal-wihara at Pollanarrua.

which is guarded with jealous care, and preserved in an elegant shrine; but it is well known that the original relic was destroyed by the Portuguese, and the present substitute is a piece of discolored ivory, bearing no resemblance to a human tooth. In all Buddhist countries, the sacred buildings present, with certain modifications, the same general character (see BUDDHISM: BURMAH: etc.); and in C. we find the three classes represented by the dagoba, or relic-shrine [*datu*, a relic, and *gabbhan*, a shrine], the temple proper, and the vihara or monastery. The labor bestowed on these edifices in the early ages of the Singhalese monarchy is astonishing. In the n. of the island, ruined cities—buried for ages in the depths of the forest, have been discovered, revealing monuments that in dimensions may almost compare with the pyramids of Egypt. The most remarkable of these vestiges of an early civilization is

Pollanarrua, ancient capital of C.; and here is the celebrated *Gal-wihara*, a rock-hewn temple, supposed 'the only example in Ceylon of an attempt to fashion an architectural design out of the rock, after the manner of the cave-temples of Ajunta and Ellora.' The reclining figure of Gautama on the right (see cut, which, with the other illustrations, are reduced from Sir J. E. Tennent's *Ceylon*), is 45 ft. in length; the upright one measures 23 ft.; and the sitting image on the left is 16 ft. from the altar to the top of the head. The cave-temple of Dambool was built B.C. 100, and is the most celebrated in the island. The bell-shaped, tapering dagobas of C., as relic-shrines, answer to the pagodas of Burmah—which they much resemble—and the topes of Afghanistan. The ruins of the Jaytawanarama dagoba still reach the height of 249 ft.; their diameter is 360 ft.; and from base to pinnacle they are covered with trees of the largest size. This enormous structure contains twenty millions cubical ft.; and Sir J. E. Tennent concludes that to erect such a mass of masonry, even in the present day, 'would occupy 500 bricklayers

Entrance to the Temple of Dambool.

from six to seven years,' at the cost of five millions of dollars. The Ambustella of Mihintala is another remarkable dagoba. A very famous object in connection with Buddhism in C. is the sacred Bo-tree of Anarajapoora (*Peepul, Ficus religiosa*), planted B.C. 288, by far the oldest tree in the world of which an authentic history exists: see BO-TREE. Among the antiquities of C. must be mentioned those wonderful monuments of the former greatness of the Singhalese people—the ruined tanks; with which almost nothing of a similar kind, whether ancient or modern, can be compared; 30 colossal reservoirs, and about 700 smaller tanks, remain, though for the most part in ruins. The

restoration of these magnificent works of irrigation has recently been begun. Brahmanism or Hinduism (q.v.) is the faith of the Tamils or Malabars, but the Moormen are Mohammedans. After the expulsion of the Dutch Christians, Protestant missions to the natives of Ceylon were commenced by the Baptists, 1813. The Wesleyan Methodists followed 1814, the Americans 1816, the Church of England 1818, and Christianity has made progress among the native populations. Of these the peasantry of the Kandy hills have proved the least accessible to its influence Schools, collegiate institutions, and female seminaries, under the direction of the missionaries, are in successful operation.

*Government, etc.*—The government of Ceylon is conducted by a governor and two councils, executive and legislative, of both of which the governor is president. The first is composed of 6 members, including the governor; the other of 17 members, including the members of the Executive Council, 4 other office-holders, and 8 unofficial members selected by the governor as representative of the different classes and interests in the community. The powers of the councils are limited, being wholly subservient to the governor, who can carry into effect any law without their concurrence. All laws must be approved of by the secretary of state for the colonies before they can take effect. Any individual properly qualified may be appointed to the most responsible situation, without reference to service, nation, or religion, and native Singhalese have occupied some of the highest posts. The island is divided into nine provinces—the Eastern, Western, Northern, Southern, Central, North Central, Northwestern, Sabaragamuwa, and Uva, and subdivided into districts. In each province is stationed a government agent. For the administration of justice there are in the civil and criminal departments a supreme court, established at Colombo; also a vice-admiralty court, and provincial courts, stationed in various districts; besides magistracies. There are municipalities or local boards in the towns, and there are also native village councils. The chief sources of revenue are the customs duties, railroad receipts, land rents, and salt farms. The chief articles of export are now free. The revenue for 1901 amounted to $8,812,000; expenditures, $8,630,000. The public debt amounts to about $17,300,000; but the finances are in a very healthy condition, as the public debt of the colony has been mostly incurred for the construction of railroads.

The principal articles of export, 1904, were tea, valued at 56,854,563 rupees (the rupee is equal to 35 cents, U.S.); cacao, 2,448,354 rupees; coffee, 380,900 rupees; cinchona, 11,385 rupees; plumbago, 6,515,050 rupees; cocoanut products, 24,439,950 rupees; areca nuts, 1,943,-126 rupees; rubber, 221,137 rupees. The principal articles of import, 1904, were cotton goods, valued at 7,051,111 rupees; salt fish, 3,538,128 rupees; rice and other

grain, 39,635,667 rupees; coal and coke, 11,775,537 rupees; spirits, etc., 1,074,375 pounds.

The tea export, 1904, reached 157,929,342 pounds; cacao, 67,355 cwt. Coffee has lost its importance, the culture of tea taking its place. The rubber industry is rapidly growing. The weight of rubber export, 1904, was 676 cwt. The total exports of Ceylon to the United Kingdom, 1904, were valued at 51,344,423 rupees.

To the ancient world, Ceylon was famous as a place of traffic. Egyptians, Greeks, Romans, Persians, and Arabians traded to its ports; and many particulars, such as geographical position and natural productions, are thought to identify Point de Galle with the Tarshish of the Hebrew historians.

The *history* of Ceylon in brief outline, may be conveniently divided into ancient and modern; and the latter into the Portuguese, Dutch, and British periods.

The records of its early history came to light 1826, and Mr. Turnour, applying himself to their study, composed an *Epitome of the History of Ceylon*, from B.C. 543 to A.D. 1798; and he records the reigns of 165 kings, who reigned during this space of 2,341 years. The most famous of the Singhalese books is the *Mahawanso*, a metrical chronicle, in the Pali language, which gives an account of the island during the above 23 centuries. The story begins with the invasion of Wijayo (B.C. 543), son of a petty Indian sovereign in the country watered by the Ganges. He subdued the Yakkhos, the aboriginal inhabitants; married a daughter of one of the native chiefs, whom he subsequently repudiated for an Indian princess; and founded a dynasty that held undivided sovereignty in Ceylon for nearly eight centuries. He bestowed on his kingdom his patrimonial name of Sihala (whence Singhalese, Ceylon), and promoted the settlement of colonists from the mainland. In the reign of king Devenipiatissa (B.C. 307), Buddhism was established as the national religion, and his reign was further remarkable by the planting of the sacred Bo-tree, B.C. 288; and then was begun the erection of those stupendous buildings already noticed. The next important epoch in Singhalese history is the usurpation of the Malabars (B.C. 237), foreign mercenaries from the Coromandel coast, to whom the native sovereigns had intrusted the defense of the island. Several Malabar invasions are chronicled in the history of Ceylon, and these foreigners long contended with the native princes for supreme authority. Passing on to A.D. 1071, a native dynasty was then re-established in the person of Wijayo Bahu, which, for 100 years, delivered the country from the dominion of the Malabars. Prakrama Bahu commenced, in 1153, a reign the most renowned in the records of Ceylon. He devoted himself to religion and agriculture, and, besides many notable religious edifices, he caused no less than 1,470 tanks to be constructed, subsequently known as the 'seas of Prakrama.' Thirty years after the death of this

monarch the Malabars landed with a large army, and speedily conquered the whole island. In 1235, a native dynasty recovered a part of the kingdom. During the reign of Dharma Prakrama IX. the Portuguese first visited Ceylon, 1505; but it was in 1517 that they first formed a permanent settlement at Colombo for trading purposes. Their encroachments soon raised the patriotic Kandyans, and it is a remarkable fact that though at the first visit of the Portuguese in 1505 they were even ignorant of the use of gunpowder, they, after awhile, excelled their enemies as musketeers, and were finally able to bring 20,000 stands of arms to bear against them. 'Amity, commerce, and religion,' was the Portuguese motto; but their rule in Ceylon is a sad story of rapacity, bigotry, and cruelty. They were at last driven from the island by the Dutch in 1658, after a contest of 20 years, when, as Sir J. E. Tennent remarks, 'the fanatical zeal of the Rom. Cath. sovereign for the propagation of the faith was replaced by the earnest toil of the Dutch traders to intrench their trading monopolies, and the almost chivalrous energy with which the soldiers of Portugal resisted the attacks of the native princes was exchanged for the subdued humbleness with which the merchants of Holland endured the insults and outrages perpetrated by the tyrants of Kandy upon their envoys and officers.' But the purely military tenure of the Dutch was destined to give place to the colonization of the British. It was during the great European war succeeding the French revolution, that the English gained possession of the island. 1795, Aug. 1, an expedition under Col. James Stuart landed at Trincomalee, which was speedily captured, and finally the garrison of Colombo surrendered on 1796, Feb. 16. By this capitulation, all the Dutch settlements and strongholds in Ceylon were ceded to the English; though the island was not formally annexed to the British crown till the peace of Amiens, 1802, Mar. 27. The native sovereigns, however, continued in the possession of their mountain territory; but at length the Kandyan king, Wikrama Raja Singha, after perpetrating the most frightful atrocities on his own people, seized and murdered certain native merchants, British subjects, trading to Kandy. War followed, 1815, Jan.; Kandy was taken, and the tyrant sent as a captive to the fortress of Vellore. 1815, Mar. 2, a treaty was concluded with the native chiefs, by which the king was formally deposed, and his territories annexed to the British crown.

The island soon made rapid strides in material prosperity. Coffee plantations rapidly extended. A coffee blight appeared 1869, and swiftly spreading, ruined many planters, ofwhom some went to California and Fiji; those who remained turned their attention to tea, cinnamon, cinchona, rubber, cacao, cardamoms.

CEYLONESE, n. *sē′lŏn-ēz′*: the natives or inhabitants of Ceylon. CEYLONITE, n. *sē′lŏn-īt*, spelled sometimes CEY-

LANITE, a black variety of the spinel from Ceylon, sometimes used in jewelry: see SPINEL.

CHAD'DA: see BENUWE.

CHAD'WICK, *chăd'wĭk* = FRENCH ENSOR: American naval officer: b. Morgantown, W. Va., 1844, Feb. 29. He graduated at the United States Naval Academy in 1866, and became a captain in 1897. During the war with Spain he commanded the armored cruiser New York, the flagship of the North Atlantic squadron, and was chief of-staff to Admiral Sampson. From 1900–3 he was president of the Naval War College. He became rear admiral 1903, Oct. 11; and was appointed commander-in-chief of the South Atlantic squadron in 1904. He has written *Temperament, Disease and Health* (1892); *An Unsolved Problem;* etc.

CHADWICK, GEORGE WHITFIELD: American musician: b. Lowell, Mass., 1854, Nov. 13. He was graduated at the Leipsic Conservatory, and in 1897 became director of the New England Conservatory of Music. He has won distinction as a composer with *Tabasco*, a comic opera; *Jubilee*, a symphony; and *Columbian Ode*, a chorus. Since 1897 he has conducted the annual music festival at Worcester, Mass.

CHADWICK, JAMES READ: American physician: b. Boston, Mass., 1844, Nov. 2; d. 1095. He graduated B.A. at Harvard 1865; M.D. 1871; and pursued further studies abroad. In 1873 he began practice in Boston, and became distinguished as a gynecologist. He was a founder of the American Gynecological Society, its secretary 1876–82, and president 1897. A strong advocate of cremation, he was president of the Massachusetts Cremation Society 1894–1905. He contributed many articles on his specialty to the *Transactions* of the American Gynecological Association, the Boston *Medical and Surgical Journal*, the *American Journal of Obstetrics*, etc.

CHADWICK, JOHN WHITE: American writer and Unitarian clergyman; b. Marblehead, Mass., 1840, Oct. 19; d. Brooklyn, N. Y., 1904, Dec. 11. His radical sermons attracted attention, and he was a liberal contributor to current literature. From 1864 till his death he was pastor of the Second Unitarian Church, in Brooklyn, N. Y. Among his works are: *A Book of Poems* (1875); *The Bible of To-day* (1878); *Origin and Destiny* (1883); *A Daring Faith* (1885); *The Man Jesus; The Faith of Reason; Old and New Unitarian Belief; The Power of an Endless Life; The Revolution of God; Theodore Parker, Preacher and Reformer* (1900); *George William Curtis; Later Poems* (1904).

CHÆRONEIA, *kĕr-o-nē'a:* city of Bœotia, anc. Greece, near the Cephissus, on the borders of Phocis, noted for several important battles in the neighborhood. In B.C. 447 the Bœotians here obtained a victory over the Athenians; and in B.C. 338, Philip of Macedon signally defeated

the united forces of the Athenians and Bœotians, and so crushed the liberties of Greece. A mound of earth, about a mile from the modern village of Kapurna, which occupies the site of the old city, still marks the place where the Thebans who fell in the battle were buried; and a magnificent lion, which Colonel Mure pronounced 'the most interesting sepulchral monument in Greece,' was excavated from this tumulus some years ago. At Chæroneia also, B.C. 86, Sulla defeated the generals of Mithridates. Plutarch was a native of this town. A few ancient remains are visible.

CHÆTODONTIDÆ, *kē-to-dŏn'tĭ-dē:* family of acanthopterous fishes, nearly corresponding to the genus *Chætodon* [Gr. hair-tooth] of Linnæus; named also SQUAMIPENNES [Lat. scaly-finned], because of the most distinctive character of the family, the incrustation of the soft portions of the dorsal and anal fins, and often of the spinous parts also, with scales, the fins appearing to taper gradually out of the thickness of the body, which is in general remarkably compressed, so that, without dissection, it is impossible to tell where they begin. The scales are strongly ctenoid (q.v.). The typical genus *Chætodon*, and those most nearly allied to it, have hair-like teeth, so that their jaws resemble brushes; some fishes of the family, however, have trenchant teeth on the jaws, and some, as *Brama* (q.v.), have card-like teeth both on the jaws and palate. Most of the chætodontidæ are tropical. They generally frequent rocky shores. Their colors are often extremely gay, and usually disposed rather in stripes or bands than in spots. Many singularities of form occur in this family, as the long slender snout of the *Chelmons*, the whip-thong-like prolongation of some of the rays of the dorsal fins in *Heniochus* and *Zanclus*, the wing-like dorsal and anal fins of *Platax*, the sharp recurved horns of the buffalo-fish (*Taurichthys*), etc. To this family belong the archer-fishes (q.v.).—The flesh of most of the chætodontidæ is of very fine flavor.

CHÆTOPHORA, n. plu. *kē-tŏf'ŏ-ră* [Gr. *chaitē*, horse hair, a horse's mane; *phorĕō*, I bear]: the tubicolous and errant annelides, together with the earth-worms, etc., which have bristle-bearing foot-tubercles, or locomotive-bristles.

CHAFE, v. *chāf* [F. *échauffer;* OF. *chaufer*, to heat, to warm—from L. *calĕfăcĕrĕ*, to make hot: prov. F. *calfar:* It. *calefare:* comp. Sp. *chafár*, to mat down the pile of velvet]: to heat; to warm with rubbing; to perfume: N. heat by friction. CHA'FING, imp. CHAFED, pp. *chāft.* CHA'FER, n. or CHAFING-DISH, a portable grate for coals. CHA'FERY, n. *-fėr-ĭ*, a forge in iron-works. CHAFING-GEAR, the stuff put upon the rigging and spars to prevent their being chafed, such as mats, sinnet, spun-yarn, strands, and the like.

CHAFE, v. *chāf* [OF. *eschauffer*, to set in a chafe: Bav. *kauchen*, to breathe, to puff: It. *sborfare*, to puff with

snorting]: to become heated with anger; to excite passion; to rage; to fret; to fume; N. heat; passion. CHA′FING, imp. CHAFED, pp. *chāft.*

CHAFER, n. *chā′fėr* [Ger. *käfer;* AS. *ceafer;* Dut. *kever,* a beetle]: common name of those beetles or coleopterous insects, which either in the perfect or larva state, are destructive to plants, particularly those which devour the wood, bark, or roots of trees. From these, however, it is sometimes extended to some coleopterous insects which have no such habit. The word chafer is seldom used alone, but generally as part of a name with some prefix; thus, *Cock-chafer, Rose-chafer, Bark-chafer,* etc.

CHAFF, v. *chăf* [Dut. *keffen,* to yap, to bark: Ger. *kaff,* idle words: but *chaff* may be considered a mere popular corruption of the verb *chafe*]: in *familiar language,* to rally one; to chatter or talk lightly. CHAFF, or CHAF′FER, n. vulgar and impertinent joking; silly banter.

CHAFF, n. *chăf* [AS. *ceaf:* Ger. *kaff:* Pers. *khah*]: the husks of grain or grasses; anything worthless; straw cut small for cattle-food. CHAF′FY, a. *-fĭ,* like chaff. CHAFF′-LESS, a. *chăf lĕs,* in *OE.,* without chaff. CHAFF-CUTTER, the agricultural machine, for cutting or chopping hay or straw, nŏt so much to facilitate mastication or digestion as to prevent animals from wasting their food. The simplest and oldest kinds are mere hand-machines with a single large knife, the hay or straw being pushed forward in a trough or box; while others are complicated, and are driven by horse, steam, or water power. CHAFF-WEED, the bastard pimpernel, *Centun′cŭlŭs min′ĭmŭs,* ord. *Primulācĕæ.*

CHAFFEE, ADNA ROMANZA: an American military officer; b. 1842, April 14. He entered the regular army, 1861; became captain, 1867. He was commissioned brig.-gen. of volunteers for the war with Spain, 1898, May 4, and became maj.-gen. on July 8 following. He commanded the troops which captured El Caney, Cuba, and afterward was chief-of-staff to both Generals Brooke and Wood, when they in turn held the post of governor-general of Cuba. He was honorably discharged under his commission of maj.-gen. of volunteers, 1899, April 13, but on the same day was reappointed a brig.-gen. of volunteers; was made a maj.-gen. of volunteers, 1900, July 10, after being chosen to command the American contingent in China. He arrived at Taku, July 18, and led the American troops, who with the allied force, entered Peking, Aug. 15, and saved the foreign legationers. He has been very popular and widely known as a dashing cavalry officer. Therefore, his appointment by the President to lead the American troops in China was most gratifying to his brother officers. He was promoted major-general of the regular army, 1901, Feb. 5. General Chaffee was made governor of the Philippine Islands, 1901, June 19, and on establishment of civil government there, 1902, July 4, was made military commander. He served in this capacity till Sept. 30 of the same year, when he

returned home and became commandant of the Department of the East. On 1903, Oct. 2 he was detailed to the general staff corps, and assigned to duty as assistant to chief-of-staff at Washington; was promoted lieutenant-general 1904, Jan. 9 and became chief-of-staff on that date but on 1906, Jan. 15, resigned and was retired February 1.

CHAFFINCH, n. *chăf'fĭnsh:* a bird of the finch family, *Fringilla cœlebs;* said to be so named as delighting in *chaff:* see CHAFF 1. It is one of the most common British birds; and is probably that species of finch (q.v.) to which the name finch, now so extended in its signification, originally belonged; *fink,* the German form of the name, and *pink* and *twink,* the English provincial forms still appropriated to the chaffinch, having some resemblance of sound to its common call-note. The whole length of the chaffinch is about six inches. The tail is very slightly forked. The male, in summer, has the top of the head and the nape of the neck bluish-gray; the back, chestnut; the wings almost black, with two conspicuous white bars; the tail, nearly black. The colors of the female are much duller than those of the male. The chaffinch is a very widely distributed species, being found in almost all parts.of Europe in some parts of Asia, in the n. of Africa, and as far west as the Azores. In the cooler northern countries, it is migratory; in more southern regions, it is stationary. Linnæus gave it the specific name *cœlebs,* from observing that the flocks congregated in winter in Sweden consisted chiefly of males, the females having, as he supposed, sought a milder climate. A partial separation of the sexes is observed also in the great winter-flocks in Britain, but it is only partial; and Yarrel thinks that the young males of the previous season, which resemble the females in plumage, are associated with them, and have been mistaken for them. The flocks seen in Britain in winter are believed to be augmented by migration from Scandinavia. The eggs are usually four or five in number, of pale purplish buff color, sparingly streaked and spotted with reddish brown.

CHAFFRON, n. *chăf'rŏn:* the same as CHANFRIN, which see.

CHAFT, n. *chăft,* CHAFTS, n. plu. *chăfts* [Icel. *kiaftr,* jaw, muzzle; *kiafta,* to move the jaws]: in *OE.,* the jaws. CHAFTY, a. *chăf'tĭ,* talkative.

CHAGRES, *châ'grĕs:* river entering the Gulf of Darien on the n. side of the Isthmus of Panama; near lat. 9° 18′ n. Though, toward its mouth, it varies in depth from 16 to 30 ft., it is yet, by reason at once of its rapidity and its falls, but little available for navigation. At its entrance is a port of its own name. But the town, however, and the stream have recently lost nearly all the advantages of their position, through the establishment of an inter-oceanic railway, which, on the Atlantic side, commences at Aspinwall, about eight m. to the north.

CHAGRIN, n. *shă-grĭn'* [F. *chagrin*, care, grief, the rough substance called *shagreen*—a type of the gnawing of care and grief: Piedm. *sagrin*, care—from *sagri*, shagreen; Pers. *saghrí*, shagreen]: ill-humor; vexation: V. to excite ill-humor in; to vex. CHAGRI'NING, imp. CHAGRINED', pp. *-grĭnd'*. vexed; displeased.

CHAILLE, *shâ-yā*, STANFORD EMERSON, American physician: b. Natchez, Miss., 1830, July 9. He graduated B.A. at Harvard in 1851, and M.D. at Tulane University in 1853, subsequently studying in Europe for three years. During 1862–3 he was medical inspector of the Confederate army in Tennessee, and later had charge of various military hospitals. He is a member of the National Board of Health, and in 1879 was president of the Havana yellow-fever commission. Since 1858 he has held various professorships in Tulane University, Louisiana, and since 1886 has been dean of the medical department, and professor of physiology, hygiene, and pathological anatomy. He is a member of numerous medical societies and boards of health, and has contributed many articles to their journals and periodicals. In addition, he has published: *Yellow Fever in Havana and Cuba; Origin and Progress of Medical Jurisprudence*, 1776-1876 (1877); *Laws of Population and Voters* (1872); *Living, Dying, Registering, and Voting Population of Louisiana*, 1868, 1874, 1875; *Intimidation of Voters in Louisiana* (1876). From 1857 to 1868 he was co-editor and proprietor of the New Orleans *Medical and Surgical Journal.*

CHAILLE-LONG, *shâ-yā-lōn*, CHARLES, American explorer, soldier, and diplomat: b. Princess Anne, Somerset Co., Md., 1842, July 2. He was educated at Washington Academy 1860, enlisted in the Union army in 1862 in the 1st Eastern Shore Maryland regiment; was promoted captain and mustered out in 1865; in 1869 was appointed lieutenant-colonel in the Egyptian army; from 1874-7 was chief of staff to General Gordon in the Soudan; executed treaty with King M'Tesa annexing Uganda to Egypt 1874, July 19; discovered Lake Ibrahim, solving problem of Nile source, 1874, August; and retired from service owing to fevers contracted 1877, August. Returning to

the United States he entered the Columbia Law School, graduating in 1880, and was admitted to the bar. Again in Egypt he was acting consul of the United States at Alexandria, when titular agents had abandoned consulate 1882, June-August, making the consulate a refuge for all nationalities after the bombardment; was secretary of legation and consul-general to Corea 1887-9; secretary 1897, August, and chargé d' affaires 1897, October—1898, September; United States special commissioner to Paris Exposition of 1900; and secretary Universal Postal Congress, Washington, 1897, May. He has received many foreign decorations and has written *Central Africa—Naked Truths of Naked People* (1876); *L'Afrique Centrale* (1877); *The Three Prophets* (1883); *Les Sources du Nil* (1891); *L'Egypte et ses Provinces Perdues* (1892); *La Corée ou Choser La Terre du Calme Matinal* (1894); and has compiled, translated, and edited *Les Combattants Français de la Guerre Américaine* 1778-83; etc.

CHAIN, n. *chān* [F. *chaîne;* OF. *chaëne*—from L. *catēna;* Sp. *cadena*]: a series of links or rings, loosely but strongly connected, generally of some metal; something that binds or restrains; any connected series or range of things, as chain of ideas, chain of mountains; bondage; a measure of length of 100 links or 66 ft: V. to fasten; to bind with a chain, or in the manner of a chain; to enslave; to fix temporarily to one spot by the sudden exhibition or expression in words of something which can excite strong mental emotion, as fear, awe. CHAIN'ING, imp. CHAINED, pp. *chānd.* CHAINLESS, a. without chains. CHAIN-MAIL, or CHAIN-ARMOR, much used in the 12th and 13th c., consisted of hammered iron links, connected one to another into the form of a garment. Such armor was much more flexible and convenient to the wearer than that formed of steel or brass plates, but was less fitted to bear the thrust of a lance. CHAIN-SHOT, two cannon-balls connected by a short chain, formerly used in naval warfare; now mostly discarded, as grape shot serves the same end. CHAIN-WORK, any sort of work in the form of links or rings. CHAIN-RULE, in *arith.*, a theorem for solving numerical problems by composition of ratios or compound proportion. CHAIN-PUMP, a pump consisting of an endless chain carrying small buckets. CHAIN-STITCH, an ornamental stitch resembling a chain; a loop-stitch in distinction from a lock-stitch.—SYN. of 'chain, v.': to fetter; bind; manacle; shackle.

CHAIN, in surveying (called Gunter's Chain, from its inventor): measure of 22 yards long, composed of 100 iron links, each of which is thus 7.92 inches long. As an acre contains 4,840 sq. yards, 10 sq. chains ($22 \times 22 \times 10 = 4{,}840$ sq. yards), or 100,000 sq. links, make an acre.

CHAIN-BRIDGE: see SUSPENSION BRIDGES.

CHAIN-CABLE: see CABLE.

CHAIN-MAKING. Iron and not steel is still the favorite material from which chains are manufactured. The

iron used is a specially rolled grade, of high tensile strength and great ductility. Chain of from 5-16 inch up to 2 inches diameter is forged by hand, and above 2 inches it is forged with the assistance of machinery.

In the smaller sizes the whole operation of chain-making is done by a single smith without any helper. The length of completed chain is hung upon a hook or some convenient support near the anvil, and the operation of forging the link proceeds as follows. In the fire are placed two or three short rods of the required diameter, and as one is heated it is drawn, cut off the desired length for one link, given a couple of blows to form the welding scarf, bent through about 130 degrees, hooked into the end of the completed chain, and the ends brought together for welding. The link is then raised to a welding heat in the fire, the abutting ends placed over what is known as the bick-iron, given a few taps to insure a good weld, brought over a 'dolly,' and with half a dozen blows on the dolly, accompanied with a dexterous movement of the link, the weld is completed and the link smoothed up to a neat finish.

In the heavier sizes of chain of over 2 inches diameter, it becomes necessary to call in the aid of machinery in shearing the iron into lengths for the links and in bending the links into shape. The scarfs are produced by shearing the iron at an angle of 60 degrees with the axis of the bar, all cuts being taken with the inclination in the same direction, so that when the links are formed up the scarfs will lap in the desired relative position. The iron is then heated and placed in a hydraulic bending machine, where it is formed against a block into a rough U shape at the first stroke, and then rolled into the oval link form on another block adjoining the first. The scarfed ends are left wide enough apart to allow of the link being hooked on to the end of the chain which is being forged. The scarfed ends are now brought down snugly into contact under an automatic quick-acting hammer, and the link is heated and then welded up under the same hammer. Most of the ship cable has a cast-iron stud inserted in each link. The ends of the stud are hollow, to match the round of the chain, and when the link has been hammered down snugly into place, it is impossible for the stud to be displaced. Cables are made in standard lengths of 15 fathoms or 90 feet, and any greater length is obtained by shackling several of the 15-fathom lengths together, the average length of a ship's cable being about 90 fathoms, or 540 feet. The life of such a cable is about 10 years.

When the 15-fathom length is completed, it is placed in an iron box and heated by steam, and then drawn through a vat of boiling tar, known as the 'tar kettle.' Here it receives a thorough coating, after which it is drawn out upon an iron grating, where the surplus tar is allowed to drain off, leaving a heavy protective coat upon the cable. In conclusion it should be noted that although each link of a chain consists of two thicknesses of bar, it must not be

presumed that a chain possesses double the strength of a single bar; actually there is a reduction of three tenths in the strength, due to the formation into links, so that the chain has but about seven tenths of the united strength of two bars of the same diameter of iron. Moreover, as the strength per square inch of a heavy bar is not so great as that of a smaller diameter iron, there is further reduction to be made on this account. Thus, if a bar of ordinary rolled iron shows a breaking strength of 20 tons per square inch, the breaking strength will decrease to 19 tons up to 2 inches, and 18 tons per inch up to 3 inches diameter of rod. Consequently the breaking strength of chain made of 1-inch iron will be about 50,000 pounds, and the breaking strength of 2-inch chain about 190,000 pounds.

CHAIN OF REASONING: in logic, an extended argument consisting of a combination of *syllogisms*, in which the conclusion of one syllogism becomes the premise of a second syllogism. The former is called the *prosyllogism* and the latter the *episyllogism*. When in such an argument all the conclusions are omitted except the last the chain is called a *Sorites; e. g.*, A is B, B is C, C is D, ∴ A is D. This is called the *progressive* or *Aristotelian* Sorites. In it the argument proceeds from the subject of the first premise to the predicate of the last. In the other form, the *regressive* or *Goclenian* Syllogism, the argument proceeds from the predicate of the first premise to the subject of the last premise, *e. g.*, C is D, B is C, A is B, ∴ A is D. In the first form only the first premise can be particular and only the last can be negative; in the second only the first premise can be negative and only the last particular. The second form of Syllogism is the reverse of the first. The Syllogism sometimes appears in hypothetical form, *e. g.*, 'If you are wise you will be good, if you are good you will be happy, if you are happy your life will be a success.'

CHAIN'EY, George: American clergyman: b. England 1851. At first a Methodist minister, he resigned in 1877, and for the next three years was pastor of the Unitarian church in Evansville, Ind. Since then he has been chiefly engaged in lecturing and writing upon theological subjects and mysticisms, traveling through Australia and Palestine on his lecture tours. He is editor of *The Interpreter*, and conducts a school of interpretation. Publications: *Foundation Stones; Unitarian Sermons* (1879); *The New Version: Discourses on the Bible* (1882); *She: An Allegory of the Church* (1889); *Jeanne D'Arc* (1888); *The Ten Commandments* (1900); etc.

CHAINPORE CORAL: see Catenipora.

CHAIN-SNAKE, or King-snake (*Corenella getula*): American species, called also thunder-snake, found from N. Y. to Fla. It has a small head, a long narrow body, and a short thick tail, is handsomely variegated with black and white, and attains a length of over four ft. It is fond of damp and shady places, and feeds on mice, moles, birds, and reptiles.

CHAIR, or CHARE, n. *chär* [AS. *cyre*, a turn; Dut. *keeren*, to turn (see CHAR 3)]: the set of men and a boy who work ogether in a glass-work during a turn or shift.

CHAIR, n. *chār* [F. *chaire*, a pulpit—from L. *cathĕdra;* Gr. *kathĕdra*, a seat]: a movable seat with a support for the back; a seat of authority, as of the chairman who presides at a public assembly; by metonymy, the person who occupies such a chair; the seat for, or the office of, a professor; the seat of authority; one of the grooved iron blocks resting on the sleepers that secure and support the rails of a railway: V. to carry in procession in a chair. CHAIR'ING, imp. CHAIRED, pp. *chārd.* CHAIR'MAN, n. the person that presides over a public or private assembly; the chief officer of a public company. CHAIR'MANSHIP, n. the office of a chairman. BATH-CHAIR, a small open carriage drawn by the hand. SEDAN-CHAIR: see note of next entry.

CHAISE, n. *shāz* [F. *chaise*, a pulpit, a chair—*lit.*, that which one can sit down in]: a light wheeled carriage drawn by one pony or horse. *Note.*—CHAISE is only a slight variation of *chaire;* in French both were formerly used in same sense; in Eng., for example, we have *sedan-chair*, a hand-carriage, usually borne on spokes, and carried by two men.

CHALAZA, n. *kă-lā'zăˊ*, or CHALAZE', n. *-lāz'* [Gr. *chalaza*, hail, a small tubercle resembling a hailstone]: in *bot.*, membrane which unites the nucleus and integuments at the base of an ovule; traversed by vessels which supply nourishment to the ovule. It is often of a different color from the rest of the integuments, presenting the appearance of a disc-like scar, and is conspicuous in the ripened seed; but it is sometimes difficult to distinguish it, particularly in *orthotropal* seeds, when it is in contact with the *hilum*, the *foramen* or *micropyle* being at the opposite extremity of the seed: see OVULE and SEED. CHALAZÆ, n. plu. *kă-lā'zē*, in an egg, two spirally twisted bands apparently formed of a peculiarly viscid albumen, having a pyramidal slope, one at each end, the apex adhering to the yolk, and the base to the white or glair; serving to keep the yolk bag near the middle as it floats in the albumen. CHALAZION, n. *kă-lā'zĭ-ŏn*, a little tumor on the edge of the eyelid, so called from its supposed resemblance to a hailstone.

CHALCEDON, *kăl'sē-don:* city of anc. Bithynia, at the entrance of the Euxine, opposite Byzantium. It was founded B.C. 684 by a colony from Megara, and soon became a place of considerable trade and importance. It contained several temples, one of which, dedicated to Apollo, had an oracle. Chalcedon was taken by the Persians, suffered the vicissitudes of war during the strife for Grecian supremacy between the Athenians and Lacedæmonians, and finally merged into the Roman empire. During the Mithridatic war, it was the scene of a bold exploit of the Pontic sovereign. He invaded Bithynia, and all the wealthy Romans in the district fled for refuge to Chalcedon, whereupon he broke the chains that protected the port, burned four

ships, and towed away the remaining sixty. Under the empire it was made a free city, and was the scene of a general council, A.D. 451. Chosroes, the Persian, captured it A.D. 616, after which it declined, until it was finally demolished by the Turks, who used its ruins to build mosques and other edifices at Constantinople. Chalcedon was the birthplace of the philosopher Xenocrates.

CHALCEDON, COUNCIL OF: fourth universal council, assembled 451 by the emperor Marcian, for the purpose of drawing up a form of doctrine in regard to the nature of Christ, which should avoid the errors equally of the Nestorians (q.v.) and Monophysites (q.v.). 600 bishops, almost all of the Eastern or Greek Church, were present. The doctrine declared to be orthodox was, that in Christ there were two natures, which could not be intermixed (this clause was directed against the Monophysites), and which also were not in entire separation (this was directed against the Nestorians), but which were so conjoined, that their union destroyed neither the peculiarity of each nature, nor the oneness of Christ's person. The Chalcedonian Christology has remained as the orthodox standard in this department in the Greek, the Roman, and predominently in the Prot. communions to this day; though it is increasingly felt to be open to criticisms on the side of its psychology; and the conviction is becoming wider and more profound that, excellent for many uses as the Chalcedonian statement doubtless is, neither it nor any other formula of human philosophy can be accepted in Christ's church as the final, complete, and authoritative utterance on the transcendent theme of the person of the Son of God.

CHALCEDONY, n. *kăl-s d'ŏ-nĭ* [see CALCEDONY, a frequent but less correct spelling]: beautiful mineral of the quartz family; rather a variety of quartz, from which it does not differ in chemical composition or any essential character. It derives its name from Chalcedon in Bithynia, near which it is found in abundance, and has been known by the same name from ancient times. It occurs in different kinds of rock, most frequently in old lavas and trap-rocks, and is found in almost all parts of the world where these exist, or where there are bowlders derived from them. It is common in Scotland, and specimens of great beauty are brought from Iceland and the Faröe Islands. It never occurs in crystals. It constitutes the whole or the principal part of many agates. It is generally translucent, sometimes semi-transparent, has not much lustre, and is in color generally white or bluish white, sometimes reddish white, sometimes milk-white, less frequently gray, blue, green, yellow, brown, or even black. Its fracture is even, or very slightly conchoidal. Chalcedony is much used in jewelry, for brooches, necklaces, and ornaments of all sorts, the largest pieces being sometimes made into little boxes, cups, etc. It was much used by the ancients, and many beautiful engraved specimens appear in antiquarian collections. Chalcedonies with disseminated spots of brown and red

were formerly very highly prized, and were called *Stigmites* or *St. Stephen's stones.* Petrified plants are sometimes found in chalcedony, in which they appear to have been incased while it was in course of formation. Specimens of chalcedony are sometimes found inclosing a little water in the interior, which gives them a very beautiful appearance; but the water easily escapes, to prevent which, rings or other ornaments made of such stones are kept in distilled water when not worn. The ancients set a very high value on these *enhydrites* [Gr. *en* and *hydor,* water]. The Vicentin was noted for producing them. CHAL'CEDON'-IC, a. *-sĕ-dŏn'ĭk,* pertaining to. CHALCED'ONYX, n. *-sĕd'-ŏ-nĭks* [*chalcedony* and *onyx*]: a variety of chalcedony; name given to agates formed of cachalong, or a white opaque chalcedony, alternating with a grayish translucent chalcedony.

CHALCHIHUITL, *châl-che-wēt'l:* stone highly valued by the Mexicans of former times, and still by the Indians of New Mexico, who make ornaments of it. It is of a green color, and has been identified by W. P. Blake with turquoise. Chalchihuitl has been for centuries dug from a quarry in Los Corillos Mountains, 20 m. s.e. of Santa Fé. Specimens of it were among the presents made by Montezuma to Cortes. The Chinese *jade* and *seitau* are thought by Prof. Pumpetty to be chalchihuitl.

CHALCIS, *kăl'sĭs:* capital of the island and govt. of Eubœa, Greece; on the Euripus, a strait separating the island from Bœotia, and which at this point is only 120 ft. wide. The Euripus is divided into two channels, of unequal breadth and depth, by a rock, which is surmounted by a castle, partly of Venetian and partly of Turkish construction. A stone bridge, some 70 ft. in length, connects the rock with the Bœotian shore, while a wooden and movable bridge of about 35 ft. connects it with Chalcis. Chalcis is a place of very great antiquity, having been founded, as tradition asserts, before the Trojan war, by an Ionian colony from Athens. Its rise was rapid. It sent out numerous colonies, and was the centre of the trade of the w. Mediterranean. Governed at first by an aristocracy, it fell into the hands of the Athenians, who B.C. 506 divided the land of Chalcis among some of their own number. It subsequently fell under the power of the Macedonians and Romans, and was at this time a place of great military importance, nearly nine m. in circumference, and had many fine temples, theatres, and other public buildings. Aristotle died at Chalcis. In the middle ages it was prosperous under the Venetians, who held it for nearly three centuries, until its conquest by the Turks, 1470. The lion of St. Mark, is or was until within recent years, seen over the gateway between the bridge and the citadel. The ancient remains now are few. The streets are narrow, but the houses, many of which owe their origin to the Venetians, are substantial and spacious. Pop. 7,000.

CHALCIS: genus of Saurian reptiles, type of a family

called *Chalcidæ*, some of which are popularly termed snake-lizards, because of the resemblance to snakes in the elongated form of the body, the limbs being also remarkably small, so that this family forms one of the transition links between the Saurian and the Ophidian reptiles. The scales are rectangular, and arranged in transverse bands, without being imbricated or disposed like tiles. The *Chalcidæ* are natives of warm climates, both in the old and new worlds.

The name Chalcis has also been applied to a genus of the order *Hymenoptera*, allied to the Ichneumons, which has become the type of a tribe or family, containing a vast number of species—1,500 being supposed to exist in Britain—all of small size, many very minute, many very brilliant in their colors, and the larvæ of all parasitic in the larvæ or pupæ, some even in the eggs, of other insects. The chrysalis of a butterfly or moth often nourishes a great number of these parasites; and they are useful in preventing the excessive multiplication of species which destroy valuable plants.

CHALCOCITE, *kăl'kō-sīt*: a native sulphide of copper having the formula $Cu_2S$. It crystallizes in the orthorhombic system, and also occurs in massive and granular forms. It has a hardness of from 2.5 to 3, and a specific gravity of from 5.5 to 5.8. It is opaque and leaden in color, with a metallic lustre. In the United States it occurs in crystals at Bristol, Conn., massive as the principal copper ore at Butte, Montana, and similarly in many copper mines in Arizona; also in Mexico, Chile, and Peru. Beautiful crystals come from Cornwall, England, and one crystal, found in Tuscany, weighs half a pound. It contains 80 per cent. of copper and is known also as 'copper-glance,' 'chalcosin,' and 'redruthite.'

CHALCOGRAPHY, n. *kăl-kŏg'ră-fĭ* [Gr. *chalkos*, copper, *grapho*, I write]: engraving on copper: a term which has been criticised in this use, and that is certainly inaccurate when applied, as it often is, to engraving on other metals. For zinc-engraving, the still less admirable word *Zincography* has been invented. CHALCOG'RAPHER, n. *-ră-fẽr*, one who; also CHALCOG'RAPHIST, n. *-ră-fĭst*.

CHALCOLITE, n. *kăl'kō-līt* [Gr. *chalkos*, copper; *lithos*, a stone]: a mineral occurring in emerald-green scales.

CHALCOPYRITES, n. plu. *kăl'kō-pī'rīts* [Gr. *chalkos*, copper, and *pyrites*]: a native sulphide of copper and iron, having the formula $Cu_2S.Fe_2S_3$, and crystallizing in the tetragonal system, commonly with a tetrahedral aspect. Chalcopyrite is brass-like in appearance, and is often tarnished and iridescent. It has a specific gravity of about 4.2, and a hardness of from 3.5 to 4. It is widely distributed, and in Cornwall, England, it constitutes the chief ore of copper. It occurs in many parts of the United States also. Owing to the iridescence noted above, it is often called 'peacock ore.' It is softer and deeper in

color than ordinary iron pyrites, with which it is sometimes confused.

CHALCOTRICHITE, n. *kăl'kō-trī'kīt* [Gr. *chalkos*, copper; *thrix* or *trĭcha*, hair]: a variety of cuprite or red copper, occurring in long fine fibres of a beautiful red color—called *plush copper* in Cornwall.

CHALDÆ'A, or CHALDEA: see BABYLON—BABYLONIA.

CHALDAIC, a. *kăl-dā'ĭk*, or CHAL'DEE, a. *-dē* [L. *Chaldæi;* Gr. *Chaldaioi*, the Chaldæans]: pertaining to Chaldæa, or Chaldea: N. the language or dialect of the Chaldæans, or Chaldeans. CHALDÆAN, or CHALDE'AN, n. *-dē'ăn*, a native of: ADJ. pertaining to. CHALDÆAN (or CHALDEAN) CHRISTIANS: see NESTORIANS. CHALDA'ISM, n. *-dā'ĭzm*, an idiom or peculiarity in the Chaldee dialect.

CHAL'DEE: see ARAMÆA.

CHALDEE, *kăl'dē* LANGUAGE: a form or dialect of the Aramean, one of the three principal varieties of the ancient Semitic. The region called in Scripture Aram may be described generally as occupying the northern and northeastern divisions of that corner of Asia which was the home of the Semitic languages. It was bounded on the north by the Taurus range and the river Tigris, which latter also formed its eastern boundary; on the west by the Mediterranean and Mount Lebanon; and on the south by Palestine and the Arabian desert. The Aramean language was very extensively known, not only within the limits above mentioned, but beyond them. The princes of Judea and Assyria were familiar with it; it was spoken in the palace of Nebuchadnezzar; and even formed the medium of communication between the Persian court and its subjects in Judea and Samaria. It may also lay claim to a high antiquity, being probably the language of Abraham previous to his migration into Palestine, and certainly of his grand-nephew Laban. Unfortunately the older monuments of the language have perished, the Chaldee portions of Daniel and Ezra being the earliest specimens we possess of a language which had probably existed and flourished at least 2,000 years before. There is another dialect of the Aramean besides the Chaldee, namely, the Syriac, and in this as well as in the Chaldee numerous writings are still extant, but they are all of comparatively recent date. The Chaldee literature is usually arranged in two divisions: the biblical Chaldee, or those portions of the Old Testament which are written in Chaldee, namely, Daniel from ii. 4 to vii. 28; Ezra iv. 8 to vi. 18, and vii. 12–26; and Jeremiah x. 11; and the Chaldee of the Targums and other later Jewish writings. The former is distinguished by a closer approach to the Hebrew idiom, and is therefore considered less pure than the Chaldee of the Targum of Onkelos, the oldest and most valuable of the Targums.

CHALDER, n. *chawl'dėr* [OF. *chauldron;* F. *chaudron*, a kettle]: in *Scot.*, a dry measure containing nearly eight

imperial quarters. CHALDRON, n. *chawl'drŏn* [from L. *caldarium*, a vessel for warm water]: measure for coals containing 36 heaped bushels; now largely disused, as coal is sold by weight.

CHALET, n. *shăl'ā* [F. and Swiss]: a summer hut or cottage on a mountain.

CHALEUR BAY, *shâ-lôr':* inlet of the Gulf of St. Lawrence, between Gaspe, a dist. of Lower Canada, and New Brunswick; extending 90 m. from e. to w., and a width varying from 12 to 20. The Ristigouche, which enters the gulf from New Brunswick at its very head, marks at its mouth the inter-provincial boundary.

CHALICE, n. *chăl'ĭs* [It. and F. *calice*—from L. *calĭcem*, a cup; Gr. *kulix* or *kulĭkă*, a cup]: a cup or bowl; a communion-cup. CHAL'ICED, a. *-ĭst*, having a cell or cup. The ancient name, chalice, for an ordinary drinking-cup, has been retained for the vessels used for the wine in the communion at the Lord's table. Chalices are commonly made of silver, though often of gold, or gilt and jewelled. Chalices were made also of glass, crystal, and agate; but these substances have been abandoned, because of their fragile nature.—The chalice is the attribute of St. John the Evangelist.

CHALK, n. *chawk* [OF. *chaulx;* F. *chaux*—from L. *calx* or *calcem*, lime]: a soft calcareous white stone composed of carbonate of lime. V. to rub or mark with chalk. CHALKING, imp. CHALKED, pp. *chawkt.* CHALK'INESS, n. CHALK'Y, a. *-ĭ*, like chalk. CHALK-BEDS: see CRETACEOUS GROUP. TO CHALK OUT, to lay out; to plan; to describe. RED-CHALK, a natural clay containing carbonate of iron. BROWN-CHALK, a familiar name for umber. BLACK-CHALK, a variety of drawing-slate. FRENCH-CHALK, or BRIANÇON-CHALK, variety of steatite or soapstone (q.v.). BEAT ONE BY LONG CHALKS, defeated him thoroughly, referring to a former system of recording merit or excellence by chalk-marks.

CHALK: soft, earthy variety of limestone or carbonate of lime, forming great strata, and claiming the attention of the geologist, even more than of the mineralogist. It is generally yellowish-white, sometimes snow-white. It is easily broken, and has an earthy fracture, is rough and very meagre to the touch, and adheres slightly to the tongue. It generally contains a little silica, alumina, or magnesia, sometimes all of these. Although often very soft and earthy it is sometimes so compact that it can be used as a building-stone; and it is used for this purpose, either rough or sawn into blocks of proper shape and size. It is burned into quicklime, and nearly all the houses in London are cemented with mortar so procured. The silicious particles being separated by pounding and diffusing in water, it becomes whiting, for domestic uses. Carpenters and others use it for making marks, which are easily effaced; on the *black-board* it has the same use.

Chalk, perfectly purified, is mixed with vegetable coloring matters, such as turmeric, litmus, saffron, and sap-green, to form pastil colors; but vegetable colors which contain an acid are changed by it: see CRAYON. The *Vienna white* of artists is simply purified chalk. In a perfectly purified state, it is administered as a medicine, to correct acidity in the stomach. Chalk is also extensively used as manure: see LIME, as a manure.

CHALK, BLACK, or DRAWING-SLATE: mineral quite different from common chalk, and apparently receives its name from resembling it in meagreness to the touch, in soiling the fingers, and in being used for drawing, writing, etc.: essentially a kind of clay (q.v.), and derives its color from the carbon which it contains. It is of slaty structure, bluish or grayish black, becoming red by exposure to heat; is easily cut and broken, and makes a perfectly black mark on paper. It is used for drawing, and as a black color in painting. It is found in primitive mountains, in Spain, France, Italy, etc.; also in the coal formation in Scotland.

CHALK, RED: *Ochry Red Clay-iron-ore*, consisting of clay and much peroxide of iron. It is of brownish-red color, and somewhat slaty structure, the cross fracture earthy. The coarser varieties are used chiefly by carpenters for making marks on wood, and by tailors for marking on cloth; the finer, by painters. It occurs in thin beds in clay-slate and grauwacke-slate in parts of Germany.

CHALKLEY, *chawk'le*, THOMAS: 1675, Mar. 3—1741, Sep. 4: b. London. He was impressed into the navy 1695, but released because, as a Quaker, he would not bear arms; became a trader, and at last a Quaker preacher; went to America 1698, and travelled a year in Va. and New England; married in England, settled at Philadelphia, and devoted himself to an itinerant ministry. He visited England, Holland, and Germany, 1707–8, and the W. Indies several times; on one of these journeys he died at Tortolo, one of the Virgin Isles, having founded the Friends' Library at Philadelphia by bequest. His journal appeared at Philadelphia 1747, and at New York 1808.

CHALKY ISLAND: in New Zealand, near the s.w. extremity of Middle Island, about lat. 46° s., and long. 166° 20′ e. It takes its name from being composed of a mass of white limestone, and imparts the same name to the adjacent bay, also to one of the harbors of the inlet.

CHALLENGE, n. *chăl'lĕnj* [OF. *chalanger*, to challenge, *chalange*, a dispute, an accusation—from L. *calumnĭārĕ*, to institute an action at law]: a call or summons to fight in single combat, to enter on a discussion, etc.; the letter or message containing the summons; an exception taken to a voter or juror; the demand of a soldier on sentry; in *OE.*, a claim: V. to call or summon to fight (see DUEL); to call upon to answer; to call upon to prove an assertion or sustain a decision; in

*OE.*, to claim as due. CHAL'LENGING, imp. CHAL'LENGED, pp. and a. *-lĕnjd.* CHAL'LENGER, n. one who. CHAL'LENGABLE, a. *-ă-bl,* that may be challenged or called in question.

CHALLENGER EXPEDITION: circumnavigating, scientific exploration of the open sea, 1872–76. Before the projecting of the Atlantic cable the prevalent ideas as to the biological conditions at the bottom of the sea were vague. It was assumed that light, as a condition of life, penetrated to a very limited depth into the sea; that pelagic life was consequently confined to a narrow fringe round the land; that at a depth of some 100 fathoms vegetable life became almost extinct; and that below 300 fathoms the sea was a desolate waste. The project of a cable, however, to link the old and new worlds called attention to the nature of the sea bottom, and expeditions for its investigation were undertaken by the British and United States governments. On the application of Professor Wyville Thomson and Dr. Carpenter, the *Lightning* was, 1868, put in readiness as a surveying ship; and a cruise between Scotland and the Färoe Isles revealed the fact that life ranging through all the invertebrate classes abounded to a depth of at least 600 fathoms, and that the sea was traversed and occupied by vast currents and layers of water of the most varying temperatures and fauna. These results were extended by two cruises, 1869 and '70, of the *Porcupine* off the w. coast of Europe and in the Mediterranean. In 1872 the *Challenger,* a corvette of 2,306 tons and 1,234 horse-power, was completely fitted and furnished with every scientific appliance for examining the sea from surface to bottom—natural history work-room, chemical laboratory, aquarium, etc. The ship was given in charge to a full naval surveying staff with Captain Nares at their head; and to a full scientific staff, with Professor Wyville Thomson at their head, for the purpose of sounding the depths, mapping the basins, and determining the physical and biological conditions of the Atlantic, the Southern, and the Pacific Oceans. The *Challenger* weighed anchor at Sheerness, 1872, Dec. 7, and on the evening of 1876, May 24, she dropped anchor at Spithead; having in these three and a half years executed her commission with singular success. In that period she cruised over 68,900 nautical miles, and established 362 stations, at which were determined the depth of channel; the bottom, surface, and intermediate temperatures, currents, and fauna; and the atmospheric and meteorological conditions. The first sounding was taken Dec. 30, when, at a point 40 m. w. of Vigo Bay, 1,125 fathoms were counted. Leaving Gibraltar Jan. 26, the party had a week's sounding, trawling, dredging, and taking of temperatures on their course to Madeira. The dredgings brought to light a number of new and surprising animal forms. Geological and zoological collections were made off Teneriffe. The greatest sounding made as far as the Canary Isles was off Cape St. Vincent, when 2,500 fathoms (15,000 ft., nearly equal to a reversed Mont Blanc) were found. A section was next made directly across the

Atlantic from Teneriffe to Sombrero in the W. Indies, reached 1873, Mar. Along this line observations were made at 23 stations regarding depth, condition, and temperature of bottom. It was generally observed that during the heat of the day the greater number of animal forms retire to a depth of a few fathoms, and came up in the cool of the evening. As to meterological observations, more than 50,000 were made in the first year of the cruise. At a mean maximum depth of 2,200 fathoms the ooze at the bottom showed one vast mass of the calcareous shells of foraminifera; but as the soundings went deeper the ooze got darker, with less and less calcareous matter. Red ooze at a depth of 3,150 fathoms showed no calcareous matter. Everywhere, from the equator to the Polar ice, the surface water contains globigerinæ, but more abundant and of larger size in warm seas. Altogether, the section from Teneriffe to Sombrero gave: (1) 80 m. of volcanic mud and sand; (2) 350 m. of globigerina ooze; (3) 1,050 m. of red clay; (4) a rising ground for 350 m. of globigerina ooze; (5) a valley of 850 m. of red clay; and (6) 40 m. of globigerina ooze. The red clay was regarded as the insoluble residue or ash of the calcareous organisms forming the globigerina ooze after the calcareous matter had been washed out. The water at the bottom, and to within 500 fathoms of the surface, was found to have the same specific gravity, but thence the specific gravity rose till it attained its maximum on the surface. Leaving the Bermudas in April the *Challenger* made a detour by way of Sandy Hook, N. J., and Little George Bank to Halifax, Nova Scotia, and then back, straight s. to the Bermudas. The Azores, Cape de Verde, St. Paul's Rocks, Fernando Noronha, Bahia, Tristan d'Acunha, and the Cape of Good Hope reached in Oct. were points on the next route; and then on by Marion and the Crozet Islands, by Kerguelen and the Heard Islands, as far s. as 65° 42′ s. lat., and on to Melbourne, reached 1874, Mar. The specimens brought up off Raoul Island from a depth of 600 fathoms showed that here the s. corresponded closely to the n. Through the coral reefs, through the Melanesian and Chinese Seas, the *Challenger* steered till she arrived at Hong-Kong 1874, Nov. 16, having inspected 17,000 m. of water since she left the Cape. Between Ké and Amboina, a wonderful variety of forms was discovered. In the section from the Admiralty Isles to Japan the *Challenger* made her greatest sounding (1875, Mar. 23), 4,575 fathoms (equal to a reversed Himalaya), deepest sounding on record except two. The bottom consisted almost entirely of siliceous shells of radiolaria. A voyage was made along the Japanese coasts and eastward as far as 135° e. Valparaiso, Magellan's Straits, Falkland Islands, Montevideo, Vigo, and Portsmouth, mark the remaining course. The average of 22 soundings from Yokohama to Honolulu gave 2,858 fathoms, and the bottom was found generally of red clay, full of concretions, mainly of peroxide of manganese, round, oval, or mammillated. Among the conclusions established by the *Challenger* expedition are: 1. That animal life exists on the bottom of

the sea at all depths. 2. That the fauna of deep water are confined mainly to two strata, one at and near the surface, the other at and near the bottom. 3. That the abyssal fauna are more nearly related than are those of shallower waters to the remains of the tertiary and secondary geologic periods. 4. That the most characteristic forms of animal life in deep seas, and those most allied to extinct specimens seem more abundant and of larger size in the Southern Ocean, and that the migration of species seems to be toward the Atlantic and Pacific. For the literature of the subject see the very copious *Reports on the Scientific Results of the Voyage of H.M.S. Challenger* (of which the 10th vol. was published 1884; and a condensed *Narrative*, two vols. 1885), edited by J. Murray: and the works of Sir C. Wyville Thomson, H. N. Moseley, Spry, Lord George Campbell, Wild. See also ATLANTIC OCEAN: PACIFIC OCEAN: DREDGE: HYDROGRAPHY: SEA: SOUNDING, DEEP SEA.

CHALLIS, n. *shăl'lĭ:* an elegant twilled fine woolen fabric, for ladies' dresses.

CHALLONER, *chăl'lon-er*, RICHARD, D.D.: 1691, Sep. 29—1781, Jan. 12; b. Lewes, in Sussex, England. His father was a Dissenter, but he was bred among Rom. Catholics, and sent, 1704, to the English college at Douay; here he became a priest and prof. He was sent on the English mission, 1730, and stationed at London, which he found it prudent to leave for a time after publishing *The Catholic Christian Instructed*, containing a reply to Middleton's famous *Letter from Rome*. His *Church History* (1737) filled three vols. folio. Gaining much reputation as a controversialist, C. was made Bishop of Debra *in partibus*, 1741, and coadjutor to Bp. Petre, vicar apostolic of the London district. On Petre's death, 1758, C. succeeded to that post. His *Garden of the Soul* is still a popular book of devotion. His *Britannia Sancta* (1745) celebrated the national saints. His *Memoirs of Missionary Priests*, etc. (two vols., 1741), designed as an antidote to Fox's *Book of Martyrs*, tells the story of Rom. Cath. victims of Protestant persecution in England. C. was obliged to leave London again during the 'No popery' riots of 1780, and died at Milton, in Berkshire. His *Life* was written by Jas. Barnard, 1784.

CHALMERS, *chăl'mẽrz*, ALEXANDER: 1759–1834; b. Aberdeen. A printer's son, he studied medicine, went to London abt. 1777, wrote for the papers and reviews, and for a time edited the *Morning Herald*. He published editions of Shakspeare and sundry British classics; an edition of the Poets, 21 vols., 1810; the Essayists, some 50 vols., 1808, 1822, etc.; and a *General Biographical Dictionary*, 32 vols. 1812–17. He was a careful and laborious compiler: 'No man ever edited so many works for the book-sellers of London.'

CHALMERS, *chăl'merz*, Sc. *chaw'merz*, GEORGE: 1742–1825; b. Fochabers, Morayshire, Scotland: historical antiquary. Having attended King's College, Aberdeen, and

studied law at Edinburgh, he went, 1763, to N. America, where he practieed as a lawyer till the breaking out of the war of independence. Being a keen loyalist he returned to Britain where he was appointed elerk to the board of trade, 1786, and held the office till his death. His great work is his *Caledonia; an Account, Historical and Topographical, of North Britain;* a produetion of profound researeh and varied erudition The first vol., historical, appeared 1807; of the other three, which were intended to give an aceount of the several countries, the seeond appeared 1810; the third 1824. A fourth vol. is understood to have been left at his death, ready for the press.

Among his other publieations are: *Political Annals of the United Colonies* (Lond. 1780); *On the Comparative Strength of Great Britain during the Present and the four Preceding Reigns* (Lond. 1782, '86, '94, 1802, '12); *A Collection of Treaties between Great Britain and other Powers* (2 vols., Lond. 1790); *Life of Daniel Defoe* (Lond, 1786); *Life of Thomas Ruddiman* (1794); *Life of Mary Queen of Scots* (Lond. 1818); editions of the works of Allan Ramsay (1800), and of Sir David Lindsay (1806), with memoirs; also various pamphlets apologizing for those, himself ineluded, who had believed in the authenticity of the Shakespeare manuscripts forged by Mr. Ireland.

CHALMERS, *chăl'mẽrz*, Se. *chaw'merz*, THOMAS, D.D., LL.D.: 1780, Mar. 17—1847, May 30; b. Anstruther, Fifeshire, Seotland: edueated at the Univ. of St. Andrews, and in his 19th year lieensed to preaeh in the (Presb.) Chureh of Scotland. In 1803 he was ordained minister of the parish of Kilmany, Fifeshire, about 9 m. from St. Andrews. At this period, his attention was entirely absorbed by mathematics and natural philosophy, to the neglect of the studies appertaining to his profession. To gratify his love of scientifie pursuits, he even formed mathematical and chemistry classes in St. Andrews during the winter of 1803-4, and by his wonderful enthusiasm and lueidity of exposition exeited intense interest, and obtained great reputation. In 1808 he published an *Inquiry into the Extent and Stability of National Resources*, which proved his eapaeity for dealing with questions of politieal eeonomy. Shortly after this, eertain domestic ealamities, and a severe illness of his own, stirred his deepest nature, and rendered him keenly susceptible to religious impressions. Having to prepare an article on Christianity for Brewster's *Edinburgh Encyc.*, he commeneed an extensive study of the evidences, and rose from his investigations convineed that Christianity was a *fact*, and the Bible the veritable 'word of God.' Then the great genius of the man broke forth like sunshine. He grew earnest, eloquent, devout, and faithful to his pastoral duties. In 1815, July, he was translated to the Tron Chureh and parish, Glasgow, where his magnifieent oratory took the city by storm. His *Astronomical Discourses* were probably the most sublimely intellectual and imaginative that had ever been preached in a Scottish pulpit. They were published 1817, and had a prodigious popularity. During the same year he visited London. where his preaching

excited as great sensation as at home. But C.'s energies could not be exhausted by mere oratory. Discovering that his parish was in a state of great ignorance and immorality, he began to devise a scheme for overtaking and checking the alarming evil. It seemed to him that the only means by which this could be accomplished was by 'revivifying, remodelling, and extending the old parochial economy of Scotland,' which had proved so fruitful of good in the rural parishes. In order to wrestle more closely with the ignorance and vice of Glasgow, C., 1819, became minister of St. John's parish, 'the population of which was made up principally of weavers, laborers, factory-workers, and other operatives.' 'Of its 2,000 families,' says Dr. Hanna, 'more than 800 had no connection with any Christian church, while the number of its uneducated children was countless.' We have not space to narrate at length how vast and successful were the labors of Chalmers. It is sufficient to say, that in pursuance of his favorite plan, he broke up his parish into 25 districts, each of which he placed under separate management, and established two week-day schools, and between 40 and 50 local Sunday schools, for the instruction of the children of the 'poorer and neglected classes,' more than 1,000 of whom attended. In a multitude of other ways he sought to elevate and purify the lives of his parishioners. While in Glasgow, C. had matured his opinions relative to the best method of providing for the poor. He disliked the English system of a 'compulsory assessment,' and preferred the old Scotch method of voluntary contributions at the church-door, administered by elders. The management of the poor in the parish of St. John's was intrusted to his care by the authorities, as an experiment, and in four years he reduced the pauper expenditure from £1,400 to £280 per annum.

But such herculean toils began to undermine his constitution, and in 1823 he accepted the offer of the moral philosophy chair in St. Andrews, where he wrote his treatise on the *Use and Abuse of Literary and Ecclesiastical Endowments* (1827). In the following year, he was transferred to the chair of theology in Edinburgh, and in 1832 published a work on political economy. In 1833 appeared his Bridgewater treatise, *On the Adaptation of External Nature to the Moral and Intellectual Constitution of Man.* It was received with great favor, and obtained for the author many literary honors; the Royal Soc. of Edinburgh electing him a fellow, and the French Institute a corresponding member, while the Univ. of Oxford conferred on him the degree D.C.L. In 1834, he was appointed convener of the church-extension committee; and after seven years of enthusiastic labor announced that upward of £300,000 had been collected from the nation, and 220 new churches built. Meanwhile, however, troubles were springing up in the bosom of the church itself. The evangelical party had become predominant in the gen. assembly, and came forward as the vindicators of popular rights, especially in relation to the settlement of pastors; the struggles in regard to patronage between them and the 'moderate' or 'Erastian' party became keener and

more frequent, until the decision of the civil courts in the famous 'Auchterarder and Strathbogie' cases brought matters to a crisis; and 1843, May 18, C., followed by 474 clergymen, left the church of his fathers, rather than sacrifice those principles which he believed essential to the purity, honor, and independence of the church: see DISRUPTION: FREE CHURCH OF SCOTLAND. The rapid formation and organization of the Free Church were greatly owing to his indefatigable exertions, in consequence of which he was elected principal of the Free Church College, and spent the close of his life in the zealous performance of his learned duties, and in perfecting his *Institutes of Theology*. Dr. C. died sudddenly at Morningside, Edinburgh.

Dr. C.'s works comprise more than 30 vols., and contain valuable and, in some cases, original contributions to the sciences of natural theology, Christian apologetics, and political economy; while on minor topics, such as the church-establishment question, they show both novelty and ingenuity of argument. As an orator, C. was unique and unrivalled. We read of men, in the history of the Christian church, whom we can believe to have been as eloquent, impassioned, and earnest; there have been in Scotland loftier and more purely original minds; but scarcely anywhere in Christian history do we encounter a man in whom intellect, feeling, and imagination were so harmoniously combined—a nature so 'nobly planned, to warn, to comfort, and command.' Scotland never produced a greater or more lovable soul, one more gentle, guileless, genial-hearted, or yet more fervid from the strength of a resolute and irresistible will before whose impetus difficulties were dashed aside as by a torrent. His Christian faith and piety were both intense and humane.

CHALONS-SUR-MARNE, *shâ-lōng'sür-mârn:* town of France, dept. of Marne, 107 m. e. of Paris by railway. It stands on the right bank of the river Marne, here crossed by a handsome stone bridge. C. is old; and the houses are chiefly of timber, lath, and plaster. The situation is agreeable, and the town contains some fine public buildings, the chief being the cathedral, in the sanctuary of which is one of the finest grand altars in France, On the e. side of the town is the splendid *Promenade du Jard*, or park, 19 acres. C. has manufactures of woolen, cotton, leather, etc., and considerable trade in grain, hemp, rape-seed oil, and Champagne wine. In 451, the Romans and Goths defeated Attila and his host of Huns near C. In 1856, Napoleon III. formed the celebrated camp of C., to the n.e. of the town. Hence, during the Franco-Prussian war, and in the night of 1870, Aug. 21, MacMahon withdrew his troops; and next day the town was occupied by the Germans.—In 1284 the pop. was 60,000. Pop. 21,500.

CHALON-SUR-SAONE, *shâ-lōng'sür-sōn:* town of France, dept. of Saone-et-Loire, about 33 m. n. of Mâcon. It is on the right bank of the Saone, at the point where that river is joined by the Canal-du-Centre, which unites the Saone with the Loire, and secures C. an extensive traffic

with the central districts of France, as well as with the Mediterranean and Atlantic. The site is that of the anc. *Cabillonum* or *Caballinum*. The town is generally well built, good quays line the river, along which also the finest houses extend. Vineyards, wood, meadows, and cultivated fields surround and add variety and beauty to the situation. Its manufactures include hats, hosiery, vinegar, oil, pottery, jewelry, and imitation pearls; and it has a large trade in the agricultural and other produce of the district. Steam-boats navigate the Soane from C. downward. Pop. 25,600.

CHALYBÆUS, *kal-ĭ-bē'ŭs:* genus of birds very closely allied to the Baritahs (q.v.), but having a rather thicker bill, and the nostrils pierced in a broad membranous space. The species are natives of New Guinea, and are of most beautiful plumage, remarkable for the brilliancy of their metallic tints, particularly for the resemblance to burnished steel, to which they owe their name [Gr. *chalyps,-ybos*, steel]. On this account, they are sometimes included under the name of birds of paradise; and the skin of *C. paradisæus*, deprived of its feet, is sold as that of a bird of paradise.

CHALYBÆUS, *châ-le-bā'ús*, Heinrich Moritz: 1796, July 3—1862; b. Pfaffroda, in Saxony; German philosopher. He was educated at Leipsic, and after some years in teaching he was appointed, 1839, prof. of philosophy in the Univ. of Kiel, where he remained till his death. His chief works are the *Historische Entwickelung der speculativen Philosophie von Kant bis Hegel* (1836—English translantions by Edersheim and Tulk); *System der speculativen Ethik* (1850); *Philosophie und Christenthum* (1853); and *Fundamental Philosophie* (1861).

CHALYBEATE, n. *kă-lĭb'ĭ-āt* [L. *chalybs;* Gr. *chalups*, very hard iron: F. *chalybe*, chalybeate]: medicine or water containing a solution of iron: Adj. impregnated with iron; having a taste like that of iron. Chalybite, n. *kăl'ĭ-bīt*, an iron ore—called also sparry or spathose iron, carbonate of iron, or siderite. Chalybean, a. *kă-lĭb'ĭ-ăn*, having the highest quality of steel.

CHALYBEATE WATERS, *ka-lĭb'ē-āt:* those which contain a considerable proportion of iron in solution. They are of two kinds, *Carbonated* and *Sulphated*. The *Carbonated C. W.* contain carbonate of iron ($FeO,CO_2$) dissolved in excess of carbonic acid, and may be recognized by forming an ochry deposit of red oxide of iron ($Fe_2O_3$) on the surface of the stones near the mouths of the springs, owing to the escape of the carbonic acid on exposure to the air. Islington Spa near London, Tunbridge Wells, and Oddy's Saline C. W. at Harrogate, are examples of this class. Where an excess of carbonic acid is present, communicating a sparkling aspect to the water and an acidulous taste, as at Pyrmont, and other places, the term *acidulo-chalybeate* or *acidulo-ferruginous* is applied. The *Sulphated C. W.* contain sulphate of iron ($FeO,SO_3$) dissolved in them; examples of this class are at the Isle of Wight (the

Sand Rock Spring), Vicars Bridge, Moffat, etc. Chalybeate waters are characterized by a more or less inky or styptic taste; by becoming of a purplish black tint when infusion of galls or tea, and some varieties of wine, are added; and by giving a pale-blue color on the addition of a few drops of ferrocyanide of potassium (yellow prussiate of potash.) Chalybeate waters are of great service in cases of debility, and the *acidulo-carbonated* kind being lighter on the stomach, is generally preferred; but all chalybeate waters are to be avoided in plethoric, febrile, and inflammatory conditions of the system.

CHAM, n. *kăm* [a western corruption of Pers. *khan*, lord]: formerly the sovereign prince of Tartary; also written KHAM.

CHAM: see NOE, AMEDÉE DE.

CHAMA, *kā′ma*, or *kăm′a:* genus of lamellibranchiate mollusks. The shell consists of two unequal valves, having two hinge-teeth in the one valve, and one in the other. This general form of the shell approaches to orbicular. The shell is generally thick, and is foliated with leaf-like projections, which arise in a somewhat regular manner from its surface; these and the colors of some of the species combine to make them very beautiful. The shells of the *Chamæ* are often called *Clams* or *Clamp*-shells, a name which they share with some of the *Pectens*, *Spondyli*, etc. They are found only in the seas of warm climates, none further n. than the Mediterranean. The Linnæan genus chama contained many species now removed to other families, but the restricted genus chama is the type of a family *Chamidæ*. 30 fossil species have been referred to chama, 4 from the Cretaceous period, and 26 from the Tertiary.

CHAMADE, n. *shă-mād′* [F. *chamade*—from It. *chiamata*, an appeal: Port. *chamar;* L. *clamārĕ*, to call]: beat of a drum or sound of a trumpet inviting an enemy to a parley: see PARLEY.

CHAMÆROPS, *kăm-ē′rops:* genus of palms, with fan-shaped leaves, less exclusively tropical than palms in general. One species, *C. humilis*, called sometimes the PALMETTO, is the only palm truly indigenous to Europe. It extends as far n. as the neighborhood of Nice. The flowers are in spathes about 6-8 inches long; the fruit is a triple blackish spongy drupe, which is eaten, as are also the young shoots. This palm is so tolerant of a cold climate, that a specimen has lived in the open air in the botanic garden of Edinburgh for more than 50 years, with the protection of matting in very severe winters. In its native regions, the leaves are much used for thatching, and for making brooms, hats, chair-bottoms, etc. They abound in an excellent fibre, which the Arabs mix with camel's hair, and make into tent covers: cordage, and sometimes sail-cloth, are made of it in Spain; it is imported into France, and used for making carpets, under the name of *African hair*. The French in Algeria make paper and pasteboard

of it; and it is supposed that it may prove a valuable commercial commodity, as a material for paper making.—Other species of the genus abundant in India, China, etc., serve similar purposes, and deserve attention in connection with paper.—To this genus belongs also the W. Indian palm, which yields the material for chip-hats (see BRAZILIAN GRASS); and the Palmetto (q.v.) of N. America is by some botanists referred to it.

CHAMALARI, *kâm-a-lâ′rē:* peak of the Himalaya, between Tibet and Bhotan; lat. 28° 4′ n., long. 90° e.; said to have an elevation of 27,200 ft., or more than five m. and a furlong.

CHAMBER, n. *chām′bėr* [F. *chambre,* a chamber—from L. *camĕra;* Gr. *kamăra,* a vault or arched roof—*lit.,* a place or apartment having an arched roof]: an apartment in a house; a retired room; a bedroom; a hollow or cavity; a political or commercial body, as a *chamber of commerce;* one of the component parts of a legislature; that part of a gun which contains the powder, etc., called the charge; in a *mine,* the spot where the powder is placed. CHAM′BERING, n. immodest behavior. CHAM′BERED, *-bėrd,* consisting of chambers or cavities; divided into cavities. CHAM′BERLAIN, n. *-lĭn* [F. *chambellan;* OF. *chambellanc,* or *chamberlenc,* a chamberlain—from It. *camarlingo;* O.H.G. *chamerling*]: one who has the charge of the apartments, etc., of a sovereign or noble; a servant who has the care of chambers; the chief official on great estates; the treasurer of a corporation. CHAM′BERLAINSHIP, n. the office of. CHAMBERS, n. plu. rooms in an inn of court or otherwise, where lawyers or other professional men reside or transact their business. CHAM′BER-MAID., a woman who cleans and arranges bedrooms. CHAMBER COUNSEL, a barrister who gives legal advice privately, or at his own chambers but does not practice in court. CHAMBER PRACTICE, the practice of a barrister who gives his opinions in his chambers.

CHAM′BER, of a piece of artillery, or small arm: a contracted part of the bore, at the breech end. The chamber contains the charge of powder, but is too small to contain the shot or shell. Some of these cavities are spherical, some cylindrical, some conical with a hemispherical termination, and some pear-shaped. Carronades and shell-guns are usually chambered. The charge just fits the chamber, and the ball or shell comes in contact with it. Chambered guns are more slow to load and fire than those which are not chambered; and therefore the adoption of this form depends much on the kind of service in which the weapon is to be employed. Its primary use is in kinds of ordnance in which the charge is small compared with the calibre, and in which, consequently, there would be a great loss of power unless the charge were confined within a comparatively limited space at the time of the explosion.

CHAMBERLAIN, *chām′bėr-lĭn,* ABIRAM: American

governor: b. Colebrook, Conn., 1837, Dec. 7. He was educated in the public schools and at Williston Seminary, Easthampton, Mass., making a special study of civil engineering. In 1856 he removed to New Britain, Conn., where he learned the trade of rule-making and practised civil engineering with his father. He was teller of the New Britain National Bank for five years, cashier of the Home National Bank of Meriden, 1867, and its president since 1881. He has held local municipal offices, was a member of the General Assembly, 1877, comptroller 1901–2, and governor of Connecticut, 1903–5.

CHAMBERLAIN, Alexander Francis: American anthropologist: b. Kenninghall, England, 1865, Jan. 12. He was graduated at Toronto University in 1886, and became a member of numerous learned societies. Since 1892 he has been lecturer on anthropology at Clark University, Worcester, Mass. He has written *The Child and Childhood in Folk-Thought* (1896); *The Child: a Study in the Evolution of Man* (1900); *Poems* (1904); and many essays on similar topics.

CHAMBERLAIN, Basil Hall: English Japanese scholar: b. Southsea, 1850, Oct. 18. He is a grandson of Basil Hall (q.v.). He is emeritus professor of Japanese and philology at the Imperial University of Tokyo, and has published *The Classical Poetry of the Japanese* (1880); *Translation of the Kojik* (1883); *A Romanized Japanese Reader* (1886); *Language, Mythology, and Geographical Nomenclature of Japan in the Light of Aino Studies* (1887); *Luchuan Grammar* (1895); *Handbook of Colloquial Japanese, Things Japanese;* etc.

CHAMBERLAIN, Daniel Henry: American lawyer: b. West Brookfield, Mass., 1835, June 23; d. 1907, Apr. 13. He graduated at Yale with high honors in 1862, and at Harvard Law School in 1863. In 1864 he was commissioned lieutenant in the 5th Massachusetts colored cavalry, served in Maryland, Louisiana, and Texas, and was promoted captain. In 1866 he settled as a cotton planter in South Carolina. Upon the call for a constitutional convention, he was chosen a delegate, and was subsequently elected attorney-general, a position he held for four years. From 1872 to 1874 he practised law at Columbia, S. C. He was governor of the State 1874–7. Though renominated in 1876 and reinaugurated in January, 1877, his election was contested by Wade Hampton, the Democratic candidate for governor. After the inauguration of President Hayes, both contestants were invited to a conference at Washington, which resulted in the U. S. troops (which had been sent to support Chamberlain) being withdrawn from South Carolina, and Gov. Chamberlain withdrawing his claim to election. He resumed law practice in New York city until his retirement to West Brookfield, Mass. He published several addresses and pamphlets, including *Charles Sumner and the Treaty of Washington* (1902).

CHAMBERLAIN, Dexter H.: 1807–88: inventor. His parents were members of the first mission in the Sandwich Islands, and he accompanied them to their mission home. He subsequently became one of the most prolific inventors of the past half century, his genius lying in the direction of mechanical devices of current necessity. Among his noted inventions were the hand planer and power planer now used in all large iron mills; the Hartshorne spring curtain-coller; the self-dating stamp; a leather splitting machine; the auger and bit used by carpenters; a machine for making hooks and eyes for dresses; and a repeating rifle. Died Boston.

CHAMBERLAIN, J. Austen, English politician, son of Joseph Chamberlain (q.v.): b. 1863. He was educated at Rugby, and Trinity College Cambridge. He was Civil Lord of the Admiralty 1895–1900, financial secretary to the Treasury, 1900–2, postmaster-general 1902–3, and since 1903 has been chancellor of the exchequer. In appearance he bears a striking resemblance to his father, the noted colonial secretary.

CHAMBERLAIN, Jacob C., American missionary: b. Sharon, Conn., 1835, April 13. He graduated at Western Reserve College 1856; studied at the Dutch Reformed Church theological seminary 1859, and also took a medical degree at the College of Physicians and Surgeons in New York. In December 1859, he went as a medical missionary to southern India, and has resided in the Madras presidency ever since, with the exception of three visits to the United States. He established a hospital and dispensary at Madanapalli 1868, and another at Palamanair 1872. He translated the Reformed Church liturgy into Telugu Madras (1873), and also *Hymns for Public and Social Worship* (1884). He has written *The Bible Tested* (1878; 7th ed. 1885); *Native Churches and Foreign Missionary Societies* (1879); *Winding up a Horse: or Christian Giving* (1879); *Break Cocoanuts Over the Wheels: or All Pull for Christ* (1885); *In the Tiger Jungle* (1896); *The Cobra's Den* (1900); *The Religions of the Orient*; *The Opportunity of the Ages*; etc.

CHAMBERLAIN, Joseph, English statesman: b. London, 1836, July. He was educated at University College School, and entered his father's screw factory at Birmingham, from which, however, he retired in 1874. He had by this time acquired considerable celebrity as a Radical politician. In 1868 he was appointed a member of the Birmingham town-council, was mayor of Birmingham from 1873 to 1876, and chairman of the Birmingham school-board from 1874 to 1876. After unsuccessfully contesting Sheffield against Mr. Roebuck in 1874, he was returned for Birmingham without opposition in June 1876. He soon made his mark in Parliament, and on the return of the Liberals to power in 1880 was appointed president of the Board of Trade, with a seat in the cabinet. To Mr. Chamberlain's exertions was due

the passing of the Bankruptcy Bill, but his efforts to amend the Merchant Shipping Acts were unsuccessful. Meanwhile his influence was increasing rapidly outside the House; he came to be regarded as the leader of the extreme Radical party, and enunciated schemes for the regeneration of the masses which were based on the doctrines of the 'restitution' of land and the 'ransom' of property. During the last hours of Mr. Gladstone's government he was understood to be opposed to the renewal of the Irish Crimes Act, and during the general election of 1886 he was most severe in his strictures on the moderate Liberals, and produced an 'unauthorized' programme (in opposition to that of Mr. Gladstone), which included the readjustment of taxation, free schools, and the creation of allotments by compulsory purchase. He was returned free of expense by the western division of Birmingham. On 1 Feb., 1886, he became president of the Local Government Board, but resigned on 26 March, because of his strong objections to Mr. Gladstone's Home Rule measures for Ireland, and after the 'Round Table' conference had failed to reunite the Liberal party he assumed an attitude of uncompromising hostility to his old leader's new policy, and was bitterly assailed by Home Rulers as a renegade. He became leader of the Liberal-Unionists when the Duke of Devonshire went to the Upper House, Lord Salisbury sent him to Washington as commissioner on the Canadian fishery dispute, and from 1895–1903 he was colonial minister in the Unionist Cabinet.

In that capacity his chief aim was to unite more closely the colonies with the mother country. During his tenure of office he had various difficult matters to handle, such as the negotiations concerning the 'Jameson raid' on the Transvaal in December 1895, and the French claims in West Africa. On news of the 'raid' being received, Mr. Chamberlain at once repudiated all connection with it on the part of the British authorities; and he subsequently denied in the most distinct manner having had any personal foreknowledge or suspicion of what was about to take place. His conduct of the negotiations with the South African Republic preceding the outbreak of war in 1899 met with enthusiastic support from many and severe censure from others. Since the conclusion of the Boer war he has visited South Africa and by his personal influence done much to bring about a good understanding between the Boers and the English government. He had much to do with the passing of the Workmen's Compensation Act of 1897. In 1896 the students of Glasgow University elected him lord rector. He carried the Australian Federation measure in Parliament (1900). In 1888 he was married to Mary, daughter of William C. Endicott, secretary of war in President Cleveland's first administration. He resigned from the Cabinet in 1903, owing to his pro-tariff views. In 1906 he was returned to Parliament frome Birmingham.

CHAMBERLAIN, Joshua Lawrence, ll.d.: soldier: b. Brewer, Me., 1828, Sep. 8. His father and grandfather, both of the same name, were officers severally in the 'Aroostook war' and that of 1812. He graduated at Bowdoin College 1852 and at Bangor Theol. Seminary 1855, but never was ordained; returned to Bowdoin as a tutor; was prof. there of rhetoric 1856–62, instructor in modern languages 1857, and nominally prof. of modern languages 1861–65; and obtaining leave of absence from the trustees for the purpose of foreign study 1862, changed his mind and joined the army as lieut.col. 20th Me. inf. He was promoted col. 1863, brig.gen. on the field 1864, and brevet maj.gen. vols. 1865. During the war he participated in 24 battles and received six wounds, three of them severe; and was appointed the officer to receive the formal surrender of the arms and colors of the Confederate army under Gen. Lee. After the close of the war he resumed his professorship at Bowdoin College, but was soon afterward elected gov. of Me., and by three re-elections held the office till 1871. On retiring from this office he was elected pres. of Bowdoin College, and served as such till 1883, beside occupying the chair of mental and moral philosophy 1874–79. In 1876 he was appointed maj.gen. of Me. militia; 1878 was a U. S. commissioner to the Paris exhibition; and till 1885 lectured on public law and political economy in Bowdoin College. He is author of *Maine: Her Place in History,* centennial oration (Augusta, 1877); *Education in Europe* (U. S. govt., Washington, 1879); *De Monte and Acadia* (1904); *Sovereignty and Sacrifice; The Two Souls; The New Nation; Ethics and Politics of the Spanish War* (1898); *Society and Societies; Property, Its Office and Sanction;* and the article *Maine* in Encyc. *Britannica.* He is now surveyor of the port, of Portland, Me.

CHAMBERLAIN, Mellen, American lawyer: b. Pembroke N. H., 1821, June 4; d. Chelsea, Mass., 1900, June 25. He graduated at Dartmouth College in 1844 and at the Harvard Law School in 1848. In 1849 he was admitted to the bar, opened a law office in Boston, and made his residence in Chelsea, where, during 51 years of citzenship, he served the town in many public capacities. In 1858 and 1859 he was a member of the Massachusetts House of Representatives, and of the Senate in 1863–4. He was associate justice of the municipal court of Boston 1866–70, and chief justice 1870–8. On 1878, Aug. 26, he was chosen librarian of the Boston Public Library, serving until ill health compelled his retirement in 1890. During his administration the new library building was begun, and the corner-stone laid. Throughout his life he was a close student and investigator of American history. Besides important chapters in Winsor's *Memorial History of Boston* (1881), and *Narrative and Critical History of America* (1888), he wrote: *John*

*Adams, the Statesman of the Revolution* (1884); *The Authentication of the Declaration of Independence* (1885); *John Adams the Statesman, with other Essays and Addresses* (1898).

CHAMBERLAIN, Montague, American naturalist: b. St. John, New Brunswick 1844, April 5. He was educated privately, both his parents being teachers. Though engaged in mercantile pursuits, he devoted much time to the study of natural history and came to be well known as an ornithological writer. In 1889 he became assistant secretary of the Lawrence Scientific School of Harvard University, and since 1893 has been secretary. He is a member of several scientific bodies, and his chief publications are: *Canadian Birds* (1870); *Birds of New Brunswick* (1882); *Mammals of New Brunswick* (1884); *Systematic Table of Canadian Birds* (1887); *Birds of Greenland* (1892); *Some Canadian Birds* (1895); *Malisect Vocabulary* (1899); *The Penobscot Indians* (1899); etc.

CHAMBERLAIN, Nathan Henry, American clergyman; b. Bourne, Mass., 1830, Dec. 25; d. there 1901, April 1. He graduated at Harvard, 1853, and studied theology at the divinity school there, and at Heidelberg, Germany, eventually becoming a Unitarian minister. He was pastor at Canton, Mass., 1857–9, and at Baltimore, Md., 1860–3. He then took orders in the Episcopal Church, and became rector at Birmingham, Conn., 1864–7; Morrisania, N. Y., 1868–71; Milwaukee, Wis., 1871–3; Somerville, Mass., 1874–9; East Boston, Mass., 1882–9. He then retired to devote himself to literary pursuits. His books are: *Autobiography of a New England Parish* (1864); *The Sphinx in Aubrey Parish* (1889); *What is the Matter with our Tariff and its Taxes* (1890); *Samuel Sewall and the World He Lived In* (1897), an admirable study of colonial life in New England; *Life of Sir Charles Napier; An Itinerary of Cape Cod.*

CHAMBERLAIN, Thomas Crowder, American geologist: b. Mattoon, Ill., 1843, Sept. 25. He was educated at Beloit College and the University of Michigan; was professor of natural sciences in Whitewater Normal School, Wis., 1869–73; professor of geology at Beloit College 1873–82; president of the University of Wisconsin 1887–92; and has been dean of the scientific faculty of the University of Chicago from 1892. He was assistant State geologist of Wisconsin 1873–6, and State geologist from 1876. He is the author of *Geology of Wisconsin* and of many important papers printed by the United States Geological Survey.

CHAM'BERLAIN, Lord, or King's Chamberlain: as he was formerly called, has been one of the principal officers of the English state from very early times, and for centuries was an influential member of the government. He has the function of endorsing the king's answer on petitions presented to him, and very often of communicating

his majesty's pleasure to parliament and to the council. He was always a member of the council himself, *ex officio*. Though he has long ceased to have any share in the responsibilities of government, the C. is still an officer of very high standing in the royal household. He has control over all the officers and servants of the royal chambers, except those of the bed-chamber; over the establishment attached to the chapel royal, the physicians, surgeons, and apothecaries of the household. The C. has further the oversight of the king's musicians, comedians, trumpeters, messengers, etc.; and all tradesmen and artificers in his service are appointed by him. When the office of keeper of the great wardrobe was abolished, 1782, the duties of providing the state-robes of the royal family, the household, and officers of state, devolved on the lord chamberlain. All theatres in towns in which a royal palace is situated, require to be licensed by the Lord C., and no new play can be performed anywhere without his license. All persons desiring to be presented at levees or drawing-rooms require to send their card to the Lord C., and it is his duty to see that the persons thus applying are entitled by station and character to be presented to the king. The C. also issues his majesty's invitations to balls, parties, etc. In accordance with ancient custom, the Lord C. is still a member of the privy council. His salary is £2,000 a year, but his tenure of office depends on that of the political party to which he belongs.

The VICE-CHAMBERLAIN is the deputy and assistant of the Lord C., and in his absence exercises the full authority which belongs to his principal.

CHAMBERLAIN, THE LORD GREAT: hereditary officer of great antiquity, formerly of great importance. He has the government of the palace at Westminster; and, on solemn occasions, the keys of Westminster hall and of the court of requests are delivered to him. At these times, the gentleman usher of the black rod, the yeoman usher, and the door-keepers, are under his orders. At coronations, state-trials, banquets, and the like, the fitting-up of the hall devolves on him. When the king goes to parliament, he delivers the sword of state to any member of the administration whom he chooses, to be borne before his majesty, he himself walking on his right hand. During the sitting of parliament, he has charge of the house of lords, and issues tickets of admission on the opening or prorogation of parliament. Some fees and perquisites belong to him. This office, conferred by Henry I. on Alberic de Vere, was inherited by female succession from the De Veres, Earls of Oxford, by the Berties, and is now held conjointly by Lady Willoughby de Eresby and the Marquis of Cholmondeley, in right of their mothers, sisters, and coheirs of Robert, fourth Duke of Ancaster. They discharge the duties alternately in each succeeding reign, a lady acting by deputy. Lord Aveland is at present deputy great chamberlain.

## CHAMBER OF COMMERCE.

CHAMBER OF COMMERCE: a body of merchants and traders, associated for promoting the interests of its own members, of the town or district to which the society belongs, and of the community generally, so far as these are related to trade and merchandise. Prominent among methods of activity of such bodies are the following: 1. Representing and urging on the legislature the views of their members in mercantile affairs; 2. Aiding in the preparation of legislative measures having reference to trade, such, for example, as the bankrupt acts; 3. Collecting statistics bearing upon the staple trade of the district; 4. In some places, acting as a sort of court of arbitration in mercantile questions; 5. Attaining by combination advantages in trade which might be beyond the reach of individual enterprise.

These institutions are of continental origin, and, like so many others which England has borrowed from that source, were introduced first into Scotland. The oldest chamber of commerce in France is that of Marseille, which dates from the end of the 14th or commencement of the 15th c. This chamber was invested with very remarkable powers. It shared in the municipal jurisdiction, and in the administration of justice in mercantile questions. It was several times suppressed and re-established, and it was not till 1650 that its powers were fixed, and that it received its ultimate organization. The second chamber in France was that of Dunkerque, established 1700. The same year a council-general of commerce was instituted at Paris, which, in addition to six councilors of state, consisted of 12 merchants or traders, delegated by the principal commercial towns of the kingdom, an arrangement which led within the next few years to the formation of chambers of commerce everywhere in France. Thus the chamber at Lyon was instituted 1702, those of Rouen and Toulouse 1703, of Montpellier 1704, of Bordeaux 1705, etc. By an order of council 1702, Aug. 30, a direct relation was established between these various chambers and the central council of commerce. These chambers were all suppressed by a decree of the national assembly 1791, but they were re-established by a consular edict 1802, which fixed the population of the towns in which they might be established and the number of their members, who were to be chosen from among the merchants who had carried on trade in person for a period of not less than 10 years. Sixty of the best known merchants, presided over by the prefect or the maire, were charged to elect the members of these new chambers. They then presented to the government two candidates for the office of member of the general council of commerce, instituted at Paris under the minister of the interior. This organization was again modified 1832, and still later by the ordonnances of 1851, Sep., and 1852, Aug., by which these bodies are now regulated. In accordance with that decree the members of these bodies are now elected by the chief merchants of each town

chosen for that purpose by the prefect; their number cannot be less than nine, nor more than 21; they hold office for six years, one-third of their number being renewed every two years, but the members resigning being re-eligible. The functions now assigned to these chambers in France are—to give to the government advice and information on industrial and commercial subjects; to suggest the means of increasing the industry and commerce of their respective districts, or of improving commercial legislation and taxation; to suggest the execution of works requisite for the public service, or which may tend to the increase of trade or commerce such as the construction of harbors, the deepening of rivers, the formation of railways, and the like. On these and similar subjects, the advice of the chambers, when not volunteered, is demanded by the government. In most of the other countries of continental Europe there are similar institutions for the purpose of conveying information and advice to the central government, and making it acquainted with local feelings and interests in commercial matters.

The oldest chamber of commerce in Great Britain is believed to be that of Glasgow, instituted 1783, Jan. 1, and soon obtaining a royal charter. That of Edinburgh was instituted 1785, and incorporated by royal charter 1786. The Edinburgh chamber of commerce was the first public body which petitioned for the abolition of the corn laws, and the adoption of free-trade principles; and stood almost alone in the United Kingdom in advocating the Suez canal project. It also originated the movement that government should undertake the telegraph service in connection with the post-office. 600 of the bankers, merchants, and ship-owners of Edinburgh and Leith constitute the chamber. The Manchester chamber, since so famous for its exertions in the cause of free-trade, was not established till 1820, and for many years it was the only institution of the kind in England. Its members number about 400. In Hull there has been a chamber of commerce since 1837, but those of Liverpool, Leeds, and Bradford, notwithstanding the great trading and manufacturing interests of these towns, were not established till 1850, in which year a similar institution was established in s. Australia. The Liverpool chamber of commerce numbers nearly 600. The annual income of the Manchester chamber is upward of £600, that of Liverpool about £800, contributed entirely by the subscriptions of members, amounting to £1, 1*s.* a year. There are new chambers of commerce in all the great mercantile towns of Great Britain and Ireland, and in 1860 there was established an 'Association of Chambers of Commerce of the United Kingdom.' In Canada, there is a Dominion board of trade, which consists of the chamber of commerce, or boards of trade, as they are indifferently called, of a dozen of the most important cities of the Dominion. "The corporation of

the chamber of commerce of the city of New York, in America,' was organized 1768, and incorporated by royal charter 1770, Mar. 13. This was the earliest institution of the kind in the United States. The charter was renewed by the legislature when the state govt. was formed. It at first consisted of 24 leading merchants, who established an exchange which still exists, though under other control. Its objects were and are to promote commerce, maintain industry, settle disputes concerning trade, and procure necessary legislation for its security and advancement. A court of arbitration has been framed to adjust differences between members; much litigation has been thus avoided. The present membership, 1,500 resident and 200 non-resident, includes the most prominent business men and financiers of the city. Meetings are held monthly. The rooms contain a very extensive collection of statistics. Similar bodies are found in most of the larger cities of the United States.

The extension of the functions of chambers of commerce in the United States, was considerable in the decade between 1890 and 1900. The movement had its origin in Germany and grew out of the organized efforts of the last 20 years to foster the world commerce of the empire. The chambers of commerce in leading cities like Berlin and Hamburg undertook the commercial training of young men, with a view to their future advancement in mercantile life and the consular service. The result was the securing of a higher order of talent in such pursuits. The hint thus thrown out was promptly taken up in the United States. The New York Chamber of Commerce, in 1899, voted a fund for the endowment of a lecture course on commerce at Columbia University; in Chicago a chair of commerce was established by that city's chamber at the University of Chicago, and in August 1900 a School of Commerce, Accounts, and Finance was established by the University of New York. Students were assured in the event of a satisfactory course of study, that they would be given posts in leading commercial establishments or appointed to consular offices so far as influence could attain that result. The movement is destined to mark a new era in the influence of chambers of commerce.

CHAMBERS, *chām'bėrz*, Charles Julius, American journalist and novelist: b. Bellefontaine, Ohio, 1850, Nov. 21. In 1870 he traveled through the West Indies, Europe, the United States, and Canada, as special correspondent of the New York *Herald*. In 1876 he published an account of his few weeks of experience (incognito) in an insane institution, entitled, *A Mad World*, which excited great interest. He has also published several novels: *On a Margin; Lovers Four and Maidens Five; Chats on Journalism; Missing; The Rascal Club; One Woman's Life; A Happy Month in Jamaica; The Destiny of Doris;* etc.

CHAMBERS, Edward Thomas Davies, Canadian journalist: b. Saffron Walden, Essex, England, 1852. He removed to Canada in 1870, and after teaching a short time entered journalism, becoming chief editor of the Quebec *Daily Chronicle* in 1897. He has published *The Port of Quebec* (1890); *The Haunts of the Ouaniche* (1891); *Quebec: Ancient and Modern* (1892); *Quebec, Lake Saint John and the Saguenay* (1893); *Chambers' Guide to Quebec* (1895); *The Book of the Ouaniche and its Canadian Environment* (1896); etc.

CHAMBERS, *chām'bėrz*, Ephraim: compiler of the first English encyclopedia: born at Kendal, latter part of the 17th c.; and while an apprentice to a globe-maker in London, conceived the idea of his encyclopedia. The first edition, 2 vols., folio, appeared 1728; ten years later, the 2d appeared; and in the year following, the 3d. The 4th ed. was issued 1741, a year after the editor's death. A 5th appeared 1746, and a 6th, with new matter, 1750. This work forms the basis of Dr. Rees's Cyclopedia in 45 quarto vols., and may be considered the forerunner of the now countless publications of an encyclopedic character (see Encyclopedia).

CHAMBERS, George Frederick, English publicist: b. 1841, Oct. 18. He was educated at King's College, London, and has filled various public appointments. Besides editing various legal text-books, guides to Sussex etc., he is the author of *Hand book of Descriptive and Practical Astronomy; Pictorial Astronomy* (1891); *The Story of the Sun, Stars, Eclipses, Weather* (1896–9); *Digests of Laws relating to Public Health, County Councils, District Councils, Parish Councils, Public Libraries, Commons and Open Spaces, Public Meetings, Rates, and Poor Law* (8 vols. 1873–99); *English, French and German Conversational Dictionary for Travellers* (1898); *Tourists Pocket Book* (1904); etc

CHAMBERS, Robert William, American artist and novelist: b. Brooklyn, N. Y., 1865, May 26. He has written: *In the Quarter* (1893); *The King in Yellow* (1893); *The Red Republic* (1894); *A King and a Few Dukes* (1894); *The Maker of Moons* (1895); *Oliver Lock; The Mystery of Choice* (1896); *Lorraine* (1896); *The Red Republic* (1896); *Ashes of Empire* (1897); *The Haunts of Men* (1898); *The Cambric Mask* (1899); *Outsiders* (1899); *The Conspirators* (1900); *Cardigan* (1901); *The Maid at Arms* (1902); *Outdoor Land* (1902); *The Maids of Paradise* (1903); *Orchard-Land* (1903); *Forest-Land* (1905); *Iole* (1905); and *With the Band* (1895) a volume of ballads.

CHAMBERS, Talbot Wilson, American clergyman: b. Carlisle, Pa., 1819 Feb. 25; d. New York 1890, Feb. 3. He graduated at Rutgers, 1834; studied theology at the Reformed Church Seminary there, and also at Princeton. He was pastor of the Reformed Dutch Church in Somerville, N. J., 1839–49. In 1849 he was installed

as pastor of the Collegiate Dutch Church in New York, and remained in association with the Middle Dutch Church congregation until his death. He was a member of the American Bible Revision Committee, and for many years chairman of the committee on versions of the American Bible Society. He wrote: *The Noon Prayer Meeting in Fulton Street* (1857); *Memoir of Theodore Frelinghuysen* (1863); *Exposition of the Book of Zechariah* (1874); in *Lange's Commentary*; *The Psalter a Witness to the Divine Origin of the Bible* (1875); *Companion to the Revised Version of the Old Testament* (1885).

CHAMBERS, Sir William, English architect: b. of Scottish parents, Stockholm, Sweden, 1726; d. London 1790, March 8. He was educated at Ripon, in Yorkshire, and while very young went as supercargo to the East Indies, resided for some time in China, and brought back many drawings of Chinese buildings and costume, which were afterward published. He then devoted himself to the study of architecture, and on returning from travels in France and Italy was appointed drawing master to the Prince of Wales, afterward George III. He laid out the royal gardens at Kew in the Chinese style, and built the villa of the Earl of Besborough at Roehampton, in the Italian style, a mansion for Lord Abercorn, near Edinburgh, and houses for Lord Melbourne and the Earl of Gower, at Whitehall and in Piccadilly. His masterpiece was Somerset house in London, which he rebuilt in 1775. He published in 1759–68, a *Treatise on Civil Architecture* in 1772, a *Disseration on Oriental Gardening.*

CHAMBERS, William and Robert; editors and publishers of *Chambers's Encyclopædia* and other works: brothers; born at Peebles, Scotland.

CHAMBERS, William, b. Peebles 1800, April 16; d. Edinburgh 1883, May 20. He was a brother of Robert Chambers (q.v.). He published *Things as They Are in America* (1853); *American Slavery and Color* (1857); *France: Its History and Revolutions* (1871); *Stories of Old Families*, etc. In 1859 he bestowed on his birthplace the commodious suite of buildings known as the Chambers Institute, comprising a library, reading-room, lecture-room, art-gallery, and museum. Of his native county he published a history in 1864. In 1865 he was elected Lord Provost of Edinburgh, in which capacity he organized and carried out many extensive and useful measures of sanitary improvement. Between 1871 and 1883 he spent upward of $100,000 on the restoration of St. Giles' Cathedral, Edinburgh.

CHAMBERS, Robert, ll.d.: 1802–1871, Mar. 17. Like his brother William, he became a book-seller in Edinburgh, and 1823–30 wrote the *Traditions of Edinburgh*, 2 vols.; *Popular Rhymes of Scotland*, 1 vol.; *Picture of Scotland*, 2 vols.; and *Histories of Rebellions in*

*Scotland, and Life of James I.*, 5 vols. Next, he edited *Scottish Ballads and Songs*, 3 vols.; and *Biography of Distinguished Scotchmen*, 4 vols. His *Traditions of Edinburgh* procured him the friendship of Sir Walter Scott, who contributed various memoranda for the work. In 1844, Robert, who, from abt. 1832, had been united in business with his brother William, published anonymously the remarkable work, *Vestiges of Creation*, which prepared the way for Darwin's great work (see SPECIES). The authorship, keenly canvassed for many years, was not revealed till the publication in 1884 (after the death of both brothers) of the 12th ed. Other works by Robert are *Ancient Sea Margins* (1838); *The Life and Works of Robert Burns* (4 vols. 1851); and the *Domestic Annals of Scotland* (3 vols. 1859–61); the *Select Writings* (7 vols.) are collected essays. The labor of preparing his last work, *The Book of Days* (2 vols. 1863), finally broke his health, and prevented further literary labor. Robert received the degree LL.D. from St. Andrews 1863, and died at St. Andrews.

William projected *Chamber's Edinburgh Journal*, and that periodical was commenced 1832, Feb. 4, about six weeks in advance of the *Penny Magazine*, and may be considered the pioneer of that class of cheap and popular periodicals of a wholesome kind now so generally diffused. The success of the *Journal* was materially promoted by the essays, moral and humorous, of Robert Chambers, who from the first was an able collaborateur. United from this period (1832) in the peculiar profession of writing, editing, printing, and publishing, William and Robert Chambers issued a series of works designed for popular instruction, including the *Journal*, now amounting, in its different series, to 71 vols. Among these works are *Chambers's Information for the People*, 2 vols.; *Chambers' Educational Course*, 250 vols.; *Cyclopedia of English Literature*, 2 vols.; *Miscellany of Useful and Entertaining Tracts*, 20 vols.; *Papers for the People*, 12 vols.; and *Chamber's Encyclopædia*, 10 vols. In conducting these laborious undertakings, they necessarily depended on a number of accomplished literary assistants. In 1849, William acquired the estate of Glenormiston, in Peeblesshire, and a few years afterward he founded and endowed an *Institution* in his native town for social improvement (see PEEBLESSHIRE). His later productions are: *Things as they are in America*, 1 vol., the result of a visit to the United States (1853); the *Youth's Companion and Counsellor*, 1 vol.; *History of Peeblesshire* (1 vol. 8vo, 1864); pamphlets on *Improved Dwellings* and *Co-operation among the Working Classes; Wintering at Mentone*, written from personal knowledge of the place during two visits; *France: its History and Revolutions* (1 vol. 1871); *Memoir of Robert Chambers, with Autobiographic Reminiscences;* and *Ailie Gilroy*, a story; more lately, *Stories of Remarkable Persons; Stories of Old Families;* and the *Story of St.*

*Giles'* (1879). Twice elected lord provost of Edinburgh, William occupied that office 1865–69, during which he promoted several important public acts, including one for the improvement of the older part of the city. In 1872, he was made LL.D. of Edinburgh. In the years preceding 1883, he carried out, at his own cost, a thorough restoration of the ancient church of St. Giles' in Edinburgh. In 1883, it was intimated that the queen had resolved to recognize his public services by conferring a baronetcy on him; but he died before the baronetcy had been gazetted. At his death, Robert Chambers, eldest son of Robert Chambers, became head of the firm, the style of which is unchanged. The firm owns an extensive printing and publishing establishment in Edinburgh, and a publishing establishment in London. The whole of the works issued by William and Robert Chambers aim at popular instruction, free of political or sectarian bias. Perhaps their greatest effort in these respects have been *Chambers's Encyclopædia.*

CHAMBERSBURG (N. J.): see TRENTON.

CHAMBERSBURG, *chām'bėrz-bŭrg:* capital of Franklin co., Penn., on the Conecocheague and Falling creeks, and on the Cumberland Valley and W. and the Philadelphia and R. railroads 52 m. s.w. of Harrisburg, in the s. part of a fertile limestone valley between the Blue and South Mountains. It was laid out 1764 and settled by Scotch-Irish, but made little progress till after the peace of 1783. In Early's raid Gen. McCausland entered Chambersburg with Confederate cavalry 1864, July 30, and demanded a tribute of $200,000 gold: this not being paid, it was set on fire and two-thirds of the town, including the entire business part, burned, causing a loss of $1,000,000. It was soon rebuilt, chiefly of brick or stone, and has now a good court-house, national banks, several churches, newspapers, the Cumberland Valley railroad shops, and manufactories of wool, paper, and iron. Wilson College, a girls' school under Presb. control, founded 1870, is here. Pop. (1910) 11,800.

CHAMBERTIN, *shŏng-bĕr-tăng':* vineyard of abt. 60 acres, noted for its product of excellent wine; dept. of Côte d'Or, France; abt. 6 m. s.s.w. from Dijon.

CHAMBERY, *shŏng-bā-rē':* town of Savoy, of which it is the capital, beautifully situated in a rich vine-clad valley, between two ridges of hills, about 45 m. w.s.w. of Geneva. Though nearly 1,000 ft. above the sea, the climate is mild; the scenery, with the river Leysse flowing through the valley, is exceedingly fine. The town itself, however, is dull and uninteresting. Some towers and other fragments of the old castle of the Dukes of Savoy, which dates from the 13th c., remain. Chambéry has manufactures of silk-gauze, soap, leather, hats, lace, and trade in silk, wine, etc. From the middle of the 16th c. to the peace of Utrecht, 1713 Chambéry was under the dominion of France; and again from the Revo-

lution to the congress of Vienna, 1815, when it was restored to the house of Savoy; but in 1860, by the cession of Savoy, it came again under the rule of France. It is an archbishop's see, and contains a cathedral, six hospitals, a castle, now the prefecture, the palace of justice, barracks, a covered market, a college, a museum, and a public library with 25,000 volumes. The old ramparts have been converted into public walks. In its vicinity are excellent baths, much frequented in summer. Its suburbs are large with many fine villas. Pop. 15,700.

CHAMBEZI, *chăm-bē′zĭ*, a river of Africa, rising in the highlands south of Lake Tanganyika, about lat. 9° 40′ s., and long. 33° 15′ e. Its tributaries are large, and form a considerable stream, which flows southwest to Lake Bangweolo during the wet season, but during the dry season, after skirting the southern border of the shrunken lake. flows directly into the Luapula River.

CHAMBLY, *shân-blē*, FORT, a fort situated near the rapids of the Richelieu or Chambly, at the outlet of Lake Champlain, during the time of the Revolutionary War. It was captured by the Colonists under Col. Bedel in 1775, and the colors of the Seventh Regiment of British regulars was sent to the Continental Congress as trophies of the victory.

CHAMBLY RIVER: a river of Canada, the same as the Richelieu or St. John.

CHAMBORD, *shŏng-bor′:* celebrated royal castle of France, dept. of Loir-et-Cher; in the midst of a vast walled park 21 m. in circumference, about 12 m. e. of Blois. Its foundation was laid 1526, by Francis I., who employed 1,800 men constantly in its erection until his death. The work was continued with less zeal by his successors, Henri II., Henri III., Charles IX.; and Louis XIV. and Louis XV. also made some additions to it. The building, which marks the transition between the fortified castle and Italian palace, is surmounted by a vast number of turrets, minarets, and cones, its most prominent features, however, being six enormous round towers, each 60 ft. in diameter. The double spiral staircase in the central tower is of great architectural interest, being so contrived that parties pass up and down without meeting each other. The castle has no less than 440 chambers, 13 staircases, and stalls for the reception of 1,200 horses. Chambord was the scene of the gallantries of Francis I. Here Henri II., Louis XIII., and Louis XIV. resided; and at one of the brilliant fêtes given at the castle by the latter, Molière performed, for the first time, his play of the *Bourgeois Gentilhomme*. Among other occupants of Chambord were Marshal Saxe, Stanislaus, King of Poland, and Marshal Berthier, upon whom it was bestowed by Napoleon I. It was bought from Berthier's widow by a number of Legitimists, and presented to the Duc de Bordeaux, son of the Duke de Berry and grandson of Charles X., who is hence called Comte de Chambord(q.v.).

CHAMBORD, *shŏng-bor'* (Henri Charles Ferdinand Marie Dieudonné d'Artois, Duc de Bordeaux), Comte de: representative of the elder branch of the House of Bourbon, and of its claims to the French throne: 1820, Sep. 29—1883, Aug. 24; b. Paris; grandson of Charles X., and son of the Duke of Berri who was murdered by Louvel, 1820, Feb. 14. The Duke of Angoulême, Charles X.'s eldest son, being childless, the Duke of Berri was heir-presumptive; and as, at his death, he left only a daughter, the joy was great when, seven months afterward, his widow gave birth to a prince, who received the title of Duke of Bordeaux—that of Comte de C., by which he was most usually known, being derived from the Castle of C. (q.v.), presented to him at his baptism. He was baptized amid circumstances of great pomp with water brought by M. de Châteaubriand from the river Jordan, and received the appelation of *l'Enfant du Miracle* ('the miraculous child'). When Charles X. abdicated the crown at the revolution 1830, he did so in favor of the grandson, the Duke of Bordeaux. The people, however, insisted on the 'citizen king,' and the elder Bourbons were banished. On the death of Charles X., the Duke of Angoulême assumed the title Louis XIX., and another party proclaimed the Duke of Bordeaux king; but at last a reconciliation was brought about by Prince Metternich. In 1839, the prince visited Italy, accompanied by his mother. After the death of the Duke of Angoulême, 1844, the heads of the different factions of Legitimists met to pay their united homage to C. In 1846, he married the eldest daughter of the Duke of Modena. It was not till after the fall of the empire, 1870, that an opportunity for the Legitimists seemed to have come. After the capitulation of Paris, 1871, the Count of C. returned to France, and, under the title of Henry V., issued a proclamation, in which he promised, if placed by the nation at the head of its affairs, to maintain the temporal power of the pope. From that time till his death he was perpetually issuing manifestoes and emitting declarations from his mimic court at Frohsdorf, in Lower Austria. These all were characterized by the same impracticable idealism and devotion to family principles; and, in 1873, he threw away a fair chance of returning to France as king, by his obstinate determination to cling to the white flag as against the tricolor. In 1873, took place the long-aimed-at 'fusion' of Orleanists and Legitimists, by which the Comte de Paris was recognized as head of the French Bourbons next to the childless C. C. died at Frohsdorf.

CHAMBRE ARDENTE, *shŏng-brar-dângt* ['the fiery chamber']: name given in France at different times to an extraordinary court of justice, probably on account of the severity of the punishments which it awarded, the most common being that of death by fire. In the year 1535, Francis I. established an inquisitorial tribunal, and a chambre ardente. Both were intended for the extirpation of heresy. The former, of which the pope was a corresponding member, searched out, by means of spies, cases of heresy, and instructed the processes; while the latter

both pronounced and executed the final judgment. Under Henri II., the activity of the C. A. received a new impulse, the entrance of that monarch into Paris, 1543, July 4, being signalized by the burning of several heretics. But Francis himself, gallant and gay as courtly history represents him, also seemed to relish a spectacle of this kind, for on various occasions he and his mistress presided at a burning. By and by, the C. A. relaxed in its penalties, and a cry was raised among some of the more bigoted Rom. Catholics that it was conniving at heresy. To clear themselves of this reproach its members commenced a series of unheard-of cruelties, which with other events contributed to originate the religious war of 1560. In 1679, Louis XIV. employed it for a new purpose—viz., to investigate the numerous reports of poisoning cases to which the trial of the Marchioness Brinvilliers (q.v.) gave rise. Many persons of the first rank, such as the Maréchal de Luxembourg and the Princess Louise of Savoy, were examined on suspicion, but no one was executed except the pretended sorcerer, Voisin (1680), after which time the C. A. ended its activity.

CHAMBRE INTROUVABLE, *shŏng-bring-trô-va-bl* [F., unfindable chamber; i.e., the chamber the like of which is not to be found again]: name sarcastically given to that chamber of deputies in France which met after the second return of Louis XVIII. (1815, July), and which, by its fanatical royalty, began to throw the country and society anew into commotion. The former chamber, which had shown much moderation, had been dissolved under the influence of the court party; and the ministry, led by Talleyrand, had done everything to procure for the ruling party at least a manageable chamber adapted for business. The number of the deputies was arbitrarily raised from 259 to 392; and to secure the victory of a complete restoration, all rushed forward who saw in the constitutional charter an encroachment on their privileges and pretensions. When it is considered, in addition, that the elections, at least in the departments of the south, took place under terror and the sanguinary outrages of a populace in a state of political and religious excitement, that the press was stifled, and the people deprived of all freedom of expression by the foreign armies, ultra-royalism could not fail to be completely triumphant. When the ministers saw this startling result, they did not venture to open the session; they resigned, and gave place to the Richelieu ministry. Then broke out the most frightful excesses in the southern provinces. At the elections in Nîmes, Aug. 22, more than 100 persons were killed by the royalist bands. At last, Oct. 7, the king opened the chamber, on which he enjoined quietness and moderation; and it appeared to take this advice to heart for an instant. But when, in one of the first sittings, Boyer d'Argenson asked for the intervention of the chamber in behalf of the Protestants, who were being slaughtered in the south by the ultra-royalist bands, the speaker was called to order, and the chamber from that time ceased to observe any bounds or moderation. The fanatical legislation of this chamber inspired the ministers,

the king, and especially the emperor Alexander, with so much aversion and apprehension, and also met such decided disapprobation of all peaceful and sincere friends of the throne, that the news of its dissolution, 1816, Apr. 5, was received with universal rejoicing. The electoral law of 1817, Feb, 5, prevented the return of a similar chamber; and only by the modified electoral law of 1820 did ultra-royalism regain a predominating influence in parliament. It is said that Louis XVIII. first used the *Chambre Introuvable* in an ironical sense, and that the majority of the chamber took it seriously as a compliment.

CHAMBREL, n. *shăm'brĕl:* the joint or bending at the middle of a horse's hind leg; the gambrel.

CHAMELEON, n. *kă-mē'lĭ-ŏn* [L. *chamæleon;* Gr. *chamailĕōn,* ground-lion—from *chamai,* on the ground; *lĕōn,* a lion]: an animal of the lizard kind that can change the color of its skin. CHAMELEON MINERAL, in *chem.*, manganate of potass, from the changes in color which its solution undergoes by oxidation.

CHAMELEON, *ka-mē'le-on* (*Chamæleo*): genus of saurian reptiles, constituting a distinct family, of very peculiar form and structure, and on various accounts highly interesting. The body is much compressed; the dorsal line sharp, in some of the species rising into an elevated crest; the back of the head also is elevated into a sort of cone. The neck is very short, and does not admit of the head being turned, for which, however, compensation is found in the remarkable powers of motion possessed by the large prominent eyes, which move independently of one another, and are covered with a membrane pierced only with a small hole for the pupil to look through. There are no external ears. The skin is not covered with scales, but, like sha-

Chameleon.

green, rough with granules. The legs raise the body rather higher than in most of the saurians; the toes, both of the fore and hind feet, are divided into two sets, one directed forward, and the other backward, so that each foot has the power of grasping like a hand. The tail is long and prehensile. The lungs are very large, and are connected with

air-cells that lie among the muscles and beneath the skin, so that the animal has a remarkable power of inflating itself with air. The tongue is remarkably extensile, and is the organ by which the animal seizes the insects which constitute its food, being darted at them with unerring aim, while a viscous saliva causes them to adhere to it, and they are carried with it into the mouth. Chameleons are slow in their movements, except those of the eyes and tongue; and they remain long fixed in one spot, awaiting the approach of insects which they seize on their coming within reach. They all live among the branches of trees. Their power of fasting is great, and with their gulping of air in respiration, and their habit of inflating themselves with air, give rise to the fable, current among the ancients and until recent times, of their living on air. Their celebrated power of changing color is not equally fabulous, and it might be rash in the present state of knowledge on the subject to assert how far it has been exaggerated. It is probably in part under the control of volition, and may be used, as has been asserted, to render the animal less noticeable, by assimilating it to the color of surrounding objects; it may depend in part on the action of light; it is certainly connected with the fear and other passions of the creature. Milne Edwards has discovered that it depends upon the presence of two differently-colored layers of pigment in the skin, generally yellow and blue.

Chameleons are natives of the warm parts of the old world, but are more abundant in Africa. One species is found in some parts of the s. of Europe, e.g. near Cadiz. The whole number of known species is about 50. When brought to more northern countries they soon die.

The fables which, in former times, were current regarding the chameleons were numerous and ridiculous. It supplied not a few of those medicines to which absurd credulity ascribed most marvellous powers.

CHAMELEON: a southern constellation within the antarctic polar circle; containing nine stars.

CHAMFER, n. *chăm′fĕr* [Port. *chanfrar*, to slope, to hollow; F. *chamfrain*, or *chanfrein*, the slope of a bevelled angle]: a small gutter or channel; a bevel or slope: V. to hollow out in channels; to flute as a column; to cut a furrow in; to slope; to wrinkle. CHAM′FERING, imp. CHAM′FERED, pp. *-fĕrd*.—In *architecture*, an angle slightly pared off is said to be chamfered. The chamfer is sometimes made slightly concave, in which case it is called a *hollow* chamfer. In Gothic architecture, chamfers frequently have ornamental terminations of various kinds. The term chamfer is applied to wood-work as well as to stone.

CHAMFORT, *shŏng-for′*, SÉBASTIEN ROCH-NICOLAS: 1741–94; b. near Clermont, in Auvergne. The child of shame and with no name but Nicolas (all the rest was assumed), he procured admission to the Collége des Grassins, at Paris, and after distinguishing himself there sought

in vain to live by literature, wrote sermons at a louis each for priests who could not write their own, gained the first of three academy prizes, and became a social lion. He was a typical Bohemian, brilliant but reckless and unstable, a diner-out and a cynical wit, the best talker of his time and a very poor writer. He was the guest of Mme. Helvetius and the sec. of the Prince de Condé; a tragedy of his was played before Louis XVI., who doubled the pension relinquished to him by Chabanon. He married a lady older than himself, an attendant on the Duchesse de Maine; she lived but six months. After haunting the court, he followed Mirabeau into the Revolution, assisted in storming the Bastile, and died of injuries inflicted by his own hand on the prospect of a second imprisonment. His complete works appeared at Paris, five vols., 1824–25, and a selection in one vol., 1852. His *Maximes et Pensées*—a class of writing requiring no long rhetorical treatment—stand next to those of La Rochefoucauld. Some of his *mots*, as the definition of the *Tiers-État*, are almost of historical importance.

CHAMFRON, n. *chăm'frŏn*, or CHAM'FRAIN, n. *-frān* [F. *chanfrein*, armor for a horse's head]: the front piece of a horse's head-armor, usually having a boss or spike ornament between the eyes.

CHAM'IER, FREDERIC: 1796–1870, Nov. 1; b. London: novelist. He entered the navy as a midshipman 1809, and distinguished himself in the war with the United States. He left the service 1833. The success of Marryat in depicting sea-life led Chamier to try the same field, in which he was not without success, though in invention and humor he falls short of his model. His best romances are: *Life of a Sailor* (3 vols., Lond. 1834); *Ben Brace* (3 vols., Lond. 1835); *The Arethusa* (3 vols., Lond. 1836); *Trevor Hastings* (3 vols., 1841); *Passion and Principle* (3 vols., 1843); *Tom Bowline* (3 vols., 1839); *Jack Adams* (3 vols., 1838), etc. All his novels have been translated into German. Chamier wrote a *Review of the French Revolution of* 1848 (Lond. 1849), in which he gives a prejudiced view of some prominent characters.

CHAMINADE, *shâ-mē-nâd*, CECILE LOUISE STEPHANIE, French musician: b. Paris, 1861, Aug. 8. She studied at Paris under Le Couppey, Savard, Marsick, and Benjamin Godard; soon acquired a high reputation as a pianist, and played at concerts in Paris, Berlin, Vienna, London, Constantinople, and other cities. Her compositions, which are widely known, include *Callirhoë*, a ballet symphony performed with great success at Marseilles (1888), Lyons (1889), and Bordeaux (1901); *Les Amazones; Ménétriers;* and a number of songs, among which are *Madrigal; Chanson Slave; Ritournelle; Fleur de Matin;* and *Sans Amour.*

CHAMISSO, *shâ-mis'o*, or *shâ-me-so'*, ADELBERT VON: 1781–1838; b. at the castle of Boncourt, Champagne; celebrated German lyric poet. His parents settled in Prussia

in 1790, and he became a page of the queen, and entered upon a military career. But when the campaign of 1806 broke out, he returned to France, for, though no admirer of Napoleon, he was unwilling to fight against his native land. At this time, he was thrown into the circle of Madam de Staël at Coppet. In 1814, Chamisso accompanied as naturalist a Russian exploring expedition around the world. Subsequently he obtained a situation in the botanical garden of Berlin, was made a member of the Acad. of Science; and after a happy domestic life, died there, universally loved and honored. His abilities as a naturalist are displayed in his work *De Animalibus quibusdam e Classe Vermium Linnæi* (1819); and his *View of the Most Useful and the Most Noxious Plants of North Germany, with Remarks on Scientific Botany.* In 1827, partly for the purpose of rebutting the charges brought against him by Kotzebue, he published *Views and Remarks on a Voyage of Discovery,* and *Description of a Voyage Round the World.* Both works display great accuracy and industry. His last scientific labor was a tract on the *Language of Owyhee.* His reputation as a naturalist has been somewhat eclipsed by that which he acquired as a poet. As early as 1804–06, he, together with Varnhagen von Ense, published a *Musen Almanach.* In 1813, he wrote his original and amusing fiction called *Peter Schlemihl,* the story of the man who loses his shadow, which has been translated into almost all the languages of Europe. The character of his poetry is wild and gloomy, and he is fond of rugged and horrible subjects. In his political songs he succeeds well in humor and irony, and he is not deficient in deep and genuine feeling. Several of his ballads and romances are master-pieces in their way. One of his longest poems, *Salas y Gomez,* written in terza rima, shows how peculiarly German the cast of Chamisso's mind was, notwithstanding his French origin. His collected works, 6 vols., appeared at Leipsic, 1836–39.

CHAMLET, n. *chăm'lĕt:* same as CAMLET.

CHAMOIS, n. *shăm'mĭ* [F. *chamois;* It. *camoscio*], (*Antilope rupicapra,* Ger. *Gemse*): species of antelope (q.v.) inhabiting the Alps and other high mountains of central and s. Europe, as the Pyrenees, the Carpathians, and the mountains of Greece; also those of some of the Mediterranean islands, Caucasus, Taurus, and other mountains of the w. of Asia. It is one of the antelopes sometimes designated *capriform,* or goatlike, because of their departure from the typical or true antelope form, and approach to that of the goats. The chamois is about the size of a large goat, but the neck is longer in proportion, and the body shorter; the horns seldom more than six or seven inches long, black, rising nearly straight up from the forehead, and so bent back at the tip as to form a hook. The color is brown, deeper in winter than in summer; the tail is black; the head is of a pale-yellow color, with a dark-brown band along each cheek.

The usual summer resort of the chamois is in the higher regions of the mountains, not far from the snow line, and it is often seen lying on the snow. In winter it descends to the higher forests. The aromatic and bitter plants of the mountain-pastures are its favorite food. It is—like the ruminants generally—very fond of salt; 'and many stones are met with in the Alps, hollowed out by the continual licking of the chamois, on account of the saltpetre with which they abound.' It is gregarious: flocks of a hundred are sometimes seen; but in the Swiss Alps, where the numbers have been much reduced by hunting, the flocks are generally very small, often of only a few individuals. Old males often live solitarily. The chamois produces one or two young at a birth, in March or April.

It is an animal of extraordinary agility, and flocks may often be observed sporting in a remarkable manner among the rocky heights. It can leap over ravines of 16 to 18 ft. wide; a wall of 14 ft. high presents no obstacle to it; and it passes readily up or down precipices which almost no other quadruped could attempt. It is said to descend obliquely almost perpendicular precipices of more than 20 ft., striking its feet once or twice against the rock, as if to stay and guide its descent, and alighting securely, often on a very narrow ridge of rock, with its hind feet first, and bringing the fore feet almost into contact with them.

The hunting of the chamois is an occupation attended with great hardships and much danger, but of which, nevertheless, some of the Swiss peasants become passionately fond. The hunter sometimes goes out on the adventurous chase alone; but more frequently several go out together, dividing into parties; and while the flock of chamois flee from those whose approach they first descry, an opportunity of using the rifle is obtained by their comrades. The scent of the chamois is extremely keen; and when by this sense it is apprised of the approach of the hunter, it becomes alarmed and restless until it sees him, upon which it rushes hastily in an opposite direction, and so falls into the ambuscade. When a flock of chamois is feeding, one is always on the watch, and by a sort of whistle announces apprehended danger.—The flesh of the chamois is highly esteemed. Its skin is made into leather, and from it the original *chamois*, or *shammoy*, or *shammy* leather, prized for softness and warmth, was obtained, although the name has now become common to leather prepared from the skins of other animals: see LEATHER.—When taken young the chamois is easily tamed. The chamois of the Persian mountains is smaller and of a paler color than the European variety, and its horns bend from the base.

CHAMOMILE (preferable spelling CAMOMILE), n. *kăm′ō-mīl* [Gr. *chamai*, on the ground; *mēlon*, an apple—so called from the smell of its flowers, (*Anthemis*)]: genus of plants of the nat. ord. *Compositæ*, sub-order *Corymbiferæ*, distinguished by imbricated bracts, a scaly conical receptacle, a

ray of one row of female florets, those of the disk hermaphrodite, the achænia obscurely four-cornered, and destitute of pappus. The species are annual and perennial herbaceous plants, natives chiefly of Europe and other temperate parts of the world. The COMMON C. (*A. nobilis*) is the most important species of the genus, well-known for its medicinal virtues; a perennial plant with a stem about a foot long, procumbent and much branched, each branch terminated by a flower (head of flowers) more than an inch broad, with yellow disk and white ray, the whole plant intensely bitter and highly aromatic. Its medicinal virtues are ascribed to the essential oil which it contains, *Oil of Chamomile*, which abounds most in the involucre. This oil is of greenish-yellow color and a strong pungent taste, and is used in the preparation of some medicines. The dried flowers are often administered in the form of an infusion, as a stimulant of the nerves of the abdomen, an alterative and antispasmodic; or are applied to the skin as an anodyne, and on account of their power of promoting absorption and suppuration. The infusion also acts as an emetic, and is often used to assist the action of other emetics. Chamomile flowers find a place in the pharmacopœia, and are also among the most esteemed domestic medicines, the plant being extensively cultivated for their sake. Yet they should be used with caution, as they have been known to produce congestion in the brain, and are very apt to aggravate any existing malady of this kind. A double-flowering variety of chamomile is more generally cultivated than the single, to supply the chamomile flowers of the shops, the flowers being whiter and more bulky, but it is otherwise rather inferior. Chamomile is easily propagated by parting the roots. It delights in a dry and rather poor soil.—The name WILD C. is given to a very similar plant (*Matricaria Chamomilla*), an annual belonging to a genus closely allied to *Anthemis*. It may readily be distinguished by the want of scales on the receptacle. Its medicinal virtues resemble those of common chamomile; it is in some parts of Europe preferred for internal use, because it is less bitter, less nauseous, and generally milder in operation.—No small quantity of common chamomile is illegally used in the manufacture of beer in England, and is imported from Germany for this purpose. Yet this plant is so abundant in some parts of the s. of England as to form a principal part of the pasture in sheep walks, and to fill the whole air with its scent. The other British species of chamomile (*Anthemis*) are mere weeds; one of them, called stinking chamomile (*A. Cotula*), is so acrid as to blister the fingers if much handled. But the flowers of the OX-EYE chamomile, or DYER'S chamomile (*A. tinctoria*), a native of many parts of the continent of Europe, yield a beautiful yellow dye, on account of which the plant is often cultivated.

CHAMOND, *shâ-mōng'*, ST.: town of France, dept. of Loire, at the confluence of the Gier and the Ban, about seven m. n.e. of St. Etienne, on the railway between that

place and Lyon. It is a flourishing well-built town, with extensive manufactures of ribbons and stay-laces. Chamond has also several silk-mills and numerous iron furnaces and foundries; and extensive coal-mines are in the vicinity. Pop. 15,000.

CHAMORERIL, or CHUMOREREEL, *chŭm-o-rė-rēl':* lake of Ladakh or Middle Tibet, lat. 32° 55′ n., long. 78° 15′ e. It is 15,000 ft. above the sea, on the plateau between the upper waters of the Sutlej and of the Indus, girt by mountains which rise, at some points, 5,000 ft. above its own level. Though it is beyond the recognized limits of perpetual congelation, yet it freezes only in winter; and is hence supposed to be of great depth. Necessarily receiving much water from the surrounding mountains, it is without any visible outlet—evaporation alone, even at this elevation, appearing to maintain one uniform surface on a length of 15 m., and a width of 2½ miles.

CHAMOUNI, or CHAMONIX, *shâ-mô-nē* (Lat. *Campus munitus*): wild and romantic valley and village among the Alps in Savoy. It lies at a distance from all the high roads, about 3,400 ft. above the level of the sea, and more than 2,000 ft. above that of the Lake of Geneva. The valley is about 13 m. long, and about two broad, and is traversed by the Arve. It is bounded at the e. end by the Col de Balme, over which there is a mule-path to Martigny, in the upper valley of the Rhone, and from the other end issues the road to Geneva, which town is 53½ m. from Chamouni. On the n. side lies Mont Breven and the chain of the Aiguilles Rouges, and on the s., the giant group of Mont Blanc, from which enormous glaciers or rivers of ice slide down, even in summer, almost to the bottom of the valley. The chief of these glaciers are—the Glacier des Bossoms, des Bois, d'Argentière, and du Tour. Ascent to a point called Montanvert brings the traveller upon the upper course of a glacier, where it expands into a great mountain lake of ice called the Mer de Glace, in which there is an island rock or oasis called Le Jardin, about seven acres in extent, covered with most beautiful herbage. The excursion to the Jardin is one of the most striking excursions within the range of Chamouni. Until 1741, the valley was almost unknown; the region was considered a wilderness, and known by the name of Les Montagnes Maudites, or 'accursed mountains.' In the above year, it was visited by two Englishmen, Pocock and Wyndham, who ascended as far as Montanvert; and a granite block there still bears the name of the Englishmen's Stone. In 1775 the attention of travellers was effectually called to it by Saussure and Bourrit. The valley is rich in peculiar plants, and furnishes an aromatic and perfectly white honey.—The village of Chamouni owes its origin to the Benedictine convent founded between 1088 and 1099. The people get their support partly from the strangers who visit the valley, and partly from the pastures and from hunting. There are several good hotels, and the best guides are to be found here for the neighboring Alps.

it is from Chamouni that Mont Blanc is usually ascended. Pop. of village about 1,000.

CHAMP, v. *chămp* [OF. *champayer*, to feed, to graze; Ice. *kampa*, to chew—from *kiammi*, a jaw]: to bite with repeated action of the teeth so as to be heard, as a horse on the bit; to eat noisily; to chew; to devour; to bite frequently. CHAM'PING, imp. CHAMPED, pp. *chămpt*.

CHAMPAC, or CHAMPAK, *châm'pak* (*Michelia Champaca*): Indian tree, possessing great beauty both of foliage and flowers, and much venerated both by Brahmanists and Buddhists. Images of Buddha are made of its wood. Its flowers have a pale-yellow tint, and a sweet oppressive perfume, celebrated in Hindu poetry.

CHAMPAGNE, *shŏng-pân'*: formerly province of France, now forming the depts. of Seine-et-Marne, Aube, Yonne, Haute-Saone, and Ardennes. The province was about 180 m. long by 150 broad, its surface presenting extensive plains with ranges of hills, especially in the n. and e. Upon these hills is grown the famous Champagne wine: see CHAMPAGNE.

In ancient times Champagne was known as a part of Gallia, was subjugated by Cæsar, and afterward was annexed to the kingdom established by the Franks. After the 11th c., it had its own dukes, vassals of the French kings. By the marriage of Philippe IV. with Joanna, heiress to the kingdom of Navarre, Champagne, and Brie, Champagne, in 1284, came to the French crown, and was incorporated by Philippe VI. 1328. During the campaign of 1792, the e. part, and, in the campaign of 1814, the w. part, of Champagne was the chief arena of warfare.

CHAMPAGNE, n. *shăm-pān'* [F.]: a wine, the produce of vineyards in the province of Champagne (q.v.). There are white and red champagnes; the white is either sparkling or still. Sparkling or effervescent (*mousseux*) champagne is the result of a peculiar treatment during fermentation. In Dec., the wine is racked off, and fined with isinglass, and in March it is bottled and tightly corked. The fermentation being incomplete when the wine is bottled, the carbonic acid gas generated in a confined space dissolves in the wine, and communicates the sparkling property to champagne. To clear the wine of sediment, the bottles are first placed in a sloping position with the necks downward, so that the sediment may be deposited in the necks of the bottles. When this sediment has been poured off, some portion of a *liqueur* (a solution of sugar-candy in cognac) is added to the wine, and every bottle is filled up with bright clarified wine, and securely re-corked. The effervescence of the wine thus prepared bursts many bottles, in some cases ten per cent.; and in seasons of early and sudden heat, as many as 20 and 25 per cent. have been burst. Wine buyers estimate the value of wine according to the breakage, that which breaks the most bottles being considered best. Still or non-effervescent champagne is first racked off in the March after the vintage. Creaming or

effervescent champagne (*demi-mousseux*) has more alcohol, but less carbonic acid gas than sparkling champagne.

The best varieties of this wine are produced at Rheims and Epernay, and generally on a chalky soil Among white champagnes of the first class, the best are those of Sillery, of fine amber hue, dry spirituous, and possessing a superior *bouquet;* those of Ay and Mareuil are less spirituous, but are sparkling, with a pleasant bouquet. Other white wines of first class are those of Hautvilliers, Dizy, Epernay, and Pierry.

In the first class of red champagne, or Montagne, are the varieties of Verzy, Verzenay, Mailly, St. Basile, Bouzy, and Thierry; all having fine color, clearness, good body, sufficient spirit, and a pleasant *bouquet.* The trade in champagne wines is chiefly in Rheims, Avise, Epernay, and Chalons-sur-Marne. The cellars in which the vintages are stored are cut out of the calcareous rock. The fact that the sale of champagne is very extensive and lucrative has given rise to adulterations. Sugar, and the juices of pears or gooseberries, or birch-juice, etc., have been used for making spurious champagne. It may fairly be reckoned that not even a third part of the wine sold for champagne in Paris is genuine. The greater part of it is readily manufactured by simply charging other light wines with carbonic acid gas. Recently the German purveyors have succeeded in preparing light wines—such as Rhenish, Main, Neckar, Meissner, and Naumburg—so much like genuine champagne as to deceive even the connoisseur. Altogether it is estimated that the district produces 1,100,000 hectolitres (24,200,000 gallons) of genuine champagne, of which, however, the finest growths make but a small part.

CHAMPAGNE, *shŏng-pân'*, or CHAMPAIGN, *shŏng-pān,* PHILIPPE DE: 1602–1674, Aug. 12: b. Brussels: painter. He was of humble origin, studied under Fouquier, and went 1621 to Paris, where he painted in the Luxembourg palace with Poussin. He became first painter to the queen, and afterward rector of the Acad. at Paris. Finally he retired to Port Royal; his portrait of his daughter, a nun there, is notable. Of his very numerous paintings the best are at Vincennes, excepting his *Crucifix,* remarkable for its perspective, on one of the vaultings of the Church of the Carmelites at Paris. His talent was of a sober, religious, and realistic cast.

CHAMPAIGN, n. *shăm'pān* [OF. *champagne;* F. *campagne,* plain, open country—from mid. L. *campānĭă,* a plain—from L. *campus,* a plain]: a flat, open country: ADJ. level; open.

CHAMPAIGN, *shăm-pān':* city of Champaign co., Ill., 128 m. s.s.w. of Chicago by the Chicago div. of the Central railroad, and 48 m. e.s.e. of Bloomington by the Indianapolis, Bloomington, and Western, which is here joined by its Havana extension. It is in a well-cultivated farming region, and connected by street cars with the co. town, Urbana, two m. e. It is the seat of University of Illinois

and of the Burnham Athenæum and Hospital; and has a fine public library, several large parks, railroad works, foundries, and furniture factories. Pop. (1890) 5,839; (1900) 9,098; (1910) 12,421.

CHAMPARAN, or CHUMPARAN, *chŭm-pa-rŭn′:* district in the Behar province of India, in the jurisdiction of the lieut.-gov. of Bengal; lat. 26°–28° n., long. 84°–86° e. It is separated from Nepál on the n. by an embankment or by streams. Except in the n. and n.w., the region is level, well cultivated, and watered by numerous rivers and lakes. Of its area, 3,531 sq. m., 2,350 are farmed, and 433 used for grazing. Rice, Indian-corn, barley, sugar-cane, opium, and indigo are produced, and gold, copper, and limestone extracted. Indigo, saltpetre, and rope are the only manufactures. The British acquired Champaran, 1765; it was a division of Sáran till 1866. The district has suffered severely during famine periods and irrigation works are reclaiming much unproductive land. A railway crosses the district. The only towns of over 6,000 pop., are Bettiah, 19,708, and Motihari, the headquarters, 8,266. Pop. of district 1,500,000, in 2,299 villages, and 242,228 houses; 86 per cent. are Hindus, and nearly all the rest Mohammedans.

CHAMPARTY, or CHAMPARTIE, n. *shăm′pâr-tĭ,* also CHAMPERTY [F. *champart,* a field-rent—from *champ,* a field; *part,* part: L. *campus-partītus,* field divided]: in *OE.,* an offense which consists in a bargain between the plaintiff or defendant in a suit, and a third party, generally a lawyer, that the latter shall have part of the land, debt, or other thing sued for, in the event of success, and that in the meantime he shall carry on the suit at his own expense. This practice has been strictly forbidden by statute in England from very early times (3 Edward I., c. 25; 13 Edward I., c. 49; etc.); and in Scotland, the rule of the civil law by which the *pactum de quotâ litis* (q.v.) was held to be a *pactum illicitum* (q.v.), and as such void, has all along been part of the common law. In former times, the evil chiefly apprehended from champarty probably was, that the honesty of judges might be tampered with by advocates who were generally their friends, and not unfrequently their very near relatives, if permitted to be personally interested in the issues of the causes in which they were professionally employed. At the present day, the chief danger consists in the encouragement which might thus be given to dishonest and oppressive litigation, and the facilities which would be afforded for nefarious transactions between the agents on the opposite sides. That practices closely analogous to champarty, though unnamed, are not unknown in the lower strata of the legal profession in all countries, is probable. The necessities of trade have introduced considerable equitable modifications into the law of champarty, for which see CHOSE IN ACTION: also BARRATOR.

CHAMP DE MARS, *shŏng dĕh mârs:* oblong park or square on the outskirts of Paris, between the Seine and

the *école militaire.* It is 3,280 ft. long, 1,640 ft. wide, flanked by ditches and rows of trees; has five gates, and is used for military maneuvres or displays, and for public gatherings. The name comes first from the Roman *Campus martius;* and second from the annual national assemblies, *Placita* or *Mâls,* of the Frankish tribes, which were held at first in March, and under the Carlovingians in May —thence called Champs de Mars or Champs de Mai. In the great field near Paris were held the *féte de la federation,* 1790, July 14, and other revolutionary or political demonstrations or rejoicings, 1791, '93, '94, '96, 1815, '27, '48, and '52, besides the periodical universal expositions. See PARIS.

CHAMPE, *chămp,* JOHN: 1752—abt. 1798; b. Loudon co., Va. He was a sergeant-major in Lee's regt., and was chosen at Washington's request to undertake the desperate enterprise of capturing Arnold after André's execution, 1780, Sep. He passed the American lines, being pursued as a deserter, reached New York, was examined by Sir H. Clinton, and given in charge to Arnold, with whom he remained, perfecting his plans; the scheme was foiled by Arnold's changing his quarters on the day designed for his abduction. Champe escaped to the patriot army, and was discharged by Washington, as the British would have hanged him as a spy had he fallen into their hands. He died in Kentucky.

CHAMPIGNON, n. *chăm-pĭn-yŏng'* [F. *champignon*— from mid. L. *campĭnĭōnem,* that which grows in the fields —from L. *campus,* a field]: an edible mushroom; the small mushroom of the fairy rings; the *Agarĭcus orĕădēs,* ord. *Fungi.*

CHAMPION, n. *chăm'pĭ-ŏn* [OF. *champion,* a champion— from mid. L. *campĭōnem,* a champion—from L. *campus,* a field of battle; Icel. *kapp,* contention; W. *camp,* a feat; Sp. *campeon,* a champion—from *campear,* to excel; Ger. *kämpfen,* to fight]: a man who undertakes to defend the cause of another in combat or otherwise; one who is bold or successful in a contest of some particular pursuit, as a champion swimmer; a hero. CHAM'PIONSHIP, n. state of being a champion.

CHAMPION, *chăm'pi-on:* a combatant representing and defending another's cause. In the judicial combats of the middle ages it was allowed to women, children, and aged persons, except in cases of high treason or of parricide, to appear in the lists by a representative. Such a hired combatant was called a champion. Those who followed this profession were generally of the lowest class, and were held disreputable; for besides the perils of the combat, they were liable to be executed as well as their clients. They were obliged to wear a peculiar dress of leather, and peculiar armor, which was also held disreputable. They were not allowed to fight on horseback, and appeared in the lists with their hair and nails cut short. Champions are mentioned as early as in the time of Charle-

magne; and Otto I. employed them in deciding the succession to the empire. At a later period, in the age of chivalry, the word champion came to have a more dignified acceptation, and signified a knight who entered the lists on behalf of an injured lady, of a child, or of any one incapable of self-defense. In England the crown even had its champion, who, mounted on horseback and armed to the teeth, challenged, at every coronation at Westminster, all who should deny the king to be the lawful sovereign of the three realms. This practice is understood to have been introduced under Richard II., and it continues as part of the ceremonial of an English coronation to this day.

CHAMPION'S HILL, Battle of: 1863, May 16. Gen. Grant, after taking Jackson, Miss., was marching thence to Vicksburg, when, in advance of Baker's Creek, about midway from Jackson to Vicksburg, and 25 miles east of the last named, he was confronted by a Confederate force of 17,500 men, under Gen. Pemberton, which, after severe fighting, he defeated and drove from the field. Grant says he fought the battle with about 15,000 men actually engaged, in four hours of hard fighting, preceded by two or three hours of skirmishes, some of which rose almost to the dignity of battles. The Union loss was 410 killed, 1,844 wounded, and 187 missing. The Confederate loss was 380 killed, 1,018 wounded, 2,441 missing, and 24 guns taken. Grant gave pursuit next day, defeated Pemberton on the Big Black, and on the 19th began the investment of Vicksburg.

CHAMPLAIN, *chăm-plān'*, Lake: between N. Y. and Vt., extending from Whitehall, N. Y., to St. John's, Canada. It is 100 m. long, from 54 to 600 ft. deep, and navigable the whole distance during the time from Apr. to Nov. The s. half is narrow, in places hardly 700 ft. wide; further n. it has a breadth of 10 to 15 m., and contains more than 50 islands, of which the chief, South Hero, 13 by 4 m., North Hero, 11 by 2, and La Motte, 6 by 2, with others, form Grand Isle co., Vt. The lake is fed by Wood creek, conveying the waters of Lake George, the Ausable, and Saranac rivers in N. Y., and several smaller streams; its outlet is the Richelieu, Lovel, or St. John's river which empty into the St. Lawrence, and with the Chambly canal can be traversed by vessels of any size. The Champlain canal connects Lake Champlain with the Hudson. The chief towns on its banks are Burlington, Vt., and Plattsburg, N. Y. The Green Mountains on the e. and the Adirondacks on the w. are in view in the n. part, and supply beautiful scenery. The N. Y. and Canada div. of the Delaware and Hudson Canal Co.'s railroad passes along its w. bank. The lake was named from Samuel de Champlain, who discovered it 1609. On its waters Arnold's flotilla was defeated by the British 1776, Oct. 11. 1814, Sep. 11, an American navy of 14 vessels, 86 guns, and about 850 men, under Capt. Macdonough, defeated a British squadron of 16 vessels, 95 guns, and 1,000 men, under Capt. Downie, in

the harbor of Plattsburg. The *Confiance*, the largest British vessel, struck her flag to the *Saratoga* after two and a half hours' fighting, and then the *Linnet*. The *Chubb* surrendered to the *Ticonderoga* and the *Finch* was taken; the 12 remaining gunboats lowered their flags and then escaped. The Americans lost 112 killed and wounded, the British nearly 200, besides many prisoners and 75 guns. The victory was due to Macdonough's precaution in throwing out kedges from the bows of the *Saratoga*, so that she could be turned when one broadside was disabled. The British army under Prevost attempted to support their navy, but lost its way in fording the Saranac river and arrived too late.

CHAMPLAIN, *shăm-plān'*, Fr. *shŏng-plăng'*, Samuel de, 1567–1635: French Canadian pioneer. He was a sea-captain's son, and after serving in the army of Henry IV., went with a Spanish fleet to the West Indies and Mexico, writing on his return a narrative of the expedition, which is preserved at Dieppe; a translation was published by the Hakluyt Society 1859. He was sent to Canada 1603 by De Chastes, explored the coast 1604–07, and made surveys and maps. Going out again 1608, he began to settle Quebec, and became lieut. to Soissons and Condé, successively governors of New France. He surrendered to the Kirks 1629, was taken to England, set at liberty 1632, returned to Canada 1633, and died there. His *Des Sauvages* appeared 1603; *Voyages*, 1613 and 1619, and an abridgment of these with continuation to 1629 and appendices, 1632. The series was published 1870.

CHAMPLAIN STAGE: the name given by American geologists to the subsidence that was a feature of the close of the Glacial Epoch in New York, New England, Ontario, and Quebec. At the beginning of the Glacial Epoch the elevation of this section of the continent may have been greater than now, but when the ice-sheet finally retreated the sea extended up the St. Lawrence River nearly to Lake Ontario, and the lower Ottawa River and Lake Champlain were occupied by salt water. The stage is named from the lines of old sea beaches containing whale and walrus bones, thus showing the submergence, typically developed about Lake Champlain. The total amount of the depression varied, being greatest over the St. Lawrence valley. About New York harbor the coast was depressed fully 70 feet; at Albany 355 feet. Along the Maine shore the land was 150 to nearly 300 feet lower than now, and in the St. Lawrence valley the depression was over 500 feet; making allowance for the previous elevation the total depression in the St. Lawrence valley reached 1,500 feet. The climate of Champlain time was probably warmer and moister than that of the present. On the Pacific coast are evidences of depression in the region about Mount St. Elias, shells of Champlain species being found at an altitude of 5,000 feet. See Glacial Period; Quaternary Period.

CHAMPLIN, *chămp'lĭn*, James Tift, American edu-

cator: b. Colchester, Conn., 1811, June 9; d. Portland, Maine, 1882, March 15. He graduated valedictorian at Brown University in 1834, and was tutor there, 1835–8. He was a Baptist pastor at Portland, Maine, 1838–41; professor of Green and Latin, Waterville (now Colby) College, 1841–58; president of the college, 1857–73; professor of intellectual and moral philosophy, 1858–73, when he removed to Portland to devote himself entirely to literary work. He published a large number of school and college text-books, including English, Greek, and Latin grammars, editions of Æschines' and Demosthenes' orations, Tacitus, and Butler's 'Analogy of Religion.' Others are: *Text-book of Intellectual Philosophy* (1860); *First Principles of Ethics* (1862); *Political Economy* (1868); *Scripture Reading Lessons* (1876); *Constitution of the United States, with Brief Comments on the Constitutions of England and France* (1880).

CHAMPLIN, John Denison, American author: b. Stonington, Conn., 1834, Jan. 29. He was graduated at Yale in 1856, and admitted to the bar in 1859. In 1864 he became associate editor of the *Standard* at Bridgeport, Conn. He afterward published *The Sentinel* (1865–9) at Litchfield, Conn., and became associate editor of the *American Encyclopædia* (1875). He is author of *Young Folks' Cyclopædia of Common Things* (1879); *Young Folks' Cyclopædia of Persons and Places* (1880); *Young Folks' Catechism of Common Things* (1880); *Young Folks' Astronomy* (1881); *Young Folks' History of the War for the Union* (1881); *Chronicle of the Coach* (1886); *Young Folks' Cyclopædia of Games and Sports* with A. E. Bostwick (1890); *Young Folks' Cyclopædia of Literature and Art* (1901); *Young Folks' Cyclopædia of Natural History* (1905).

CHAMPNEY, *chămp'nĭ*, Benjamin: American artist: b. New Ipswich, N. H., 1817, Nov. 20. He went to Boston in 1834, and for three years worked in a lithographic establishment. From 1841 to 1848 he studied painting in Paris and Italy, exhibiting several times in the Paris Salon. He works chiefly in landscape and flower painting, and his White Mountain paintings, which are owned in and around Boston, are famous. Since 1853 he has passed most of his summers at his cottage and studio in North Conway, N. H.

CHAMPNEY, Elizabeth (Williams), American writer for young people: b. Springfield, Ohio, 1850, Feb. 6. She was married to J. W. Champney (q.v.), 1875, May 15. Many of her books are illustrated by her husband. Among them are the Vassar Girls' Series, *Three Vassar Girls Abroad: In England; In South America*, etc. *In the Sky-Garden; All Around a Palette; Rosemary and Rue; The Bubbling Teapot; Bourbon Lilies; Sebia's Tangled Web; Romance of the Feudal Chateaux; Fables in Astronomy; Six Boys; Dames' and Daughters' Series.*

CHAMPNEY, James Wells: American artist: b. Boston, Mass., 1843, July 16; d. New York, 1903, May 1. He studied in Europe under Edouard Frere, and in 1882 be-

came a member of the National Academy. He excelled in genre pictures and portraits, and exhibited oil paintings at the Columbian World's Fair (1893), and at the Paris (1900) Exposition.

CHAMPNEYS, *chămp'nĭz*, Basil, English architect: b. 1842. He was educated at Trinity College, Cambridge, and after studying architecture with the architect Prichard of Llandaff, began the practice of his profession in 1867. Important works of his are the divinity and literary schools of Newnham College, and the Archæological Museum at Cambridge; Indian Institute, Robinson Tower at New College, and Mansfield College at Oxford; Rylands Library in Manchester; Butler Museum at Harrow; and Quincentenary buildings at Winchester College. He is cathedral architect at Manchester. He has published *A Quiet Corner of England*, a delightful description of Rye and Winchelsea (1875); *Henry Merritt: Art Criticism and Romance* (1879); *Coventry Patmore: Memoirs and Correspondence* (1900).

CHAMPOLLION, *sham-pol'e-on*, Fr. *shŏng-pol-yōng'*, Jean François: 1790, Dec. 3—1832, Mar. 4; b. Figeac, dept. of Lot, France; illustrious name in modern Egyptian archæology. In 1807, Champollion went to Paris, to pursue oriental studies, and, 1809, was appointed prof. of history in the Lyceum of Grenoble. In 1811–14 he published his work, *L'Egypte sous les Pharaohs*. In his endeavor to decipher the Rosetta Stone, Champollion labored under the error of supposing that in this inscription the hieroglyphics were wholly ideographic, and the demotic and hieratic characters wholly phonetic. Afterward he was led to believe that the hieratic characters were of the same nature as the hieroglyphic, and this conviction he expressed in a communication made to the *Académie des Inscriptions*, 1821, Aug. In the same year he published his essay, *Sur l'Ecriture Hiératique des Anciens Egyptiens* (Grenoble), a work now scarce. In this essay he continued to assert the common ideographic nature of both hieroglyphic and hieratic characters. Meanwhile, Champollion had been made acquainted with the conclusions of the acute mathematician, Dr. Thomas Young (q.v.), respecting the phonetic use of hieroglyphic signs. Without doubt, it was this important discovery, of which Dr. Young, however, made no great use, that set Champollion on the right track of investigation, and led to those brilliant results which were regarded by Niebuhr as constituting the greatest discovery of the century. By a comparison of the name of Ptolemy on the Rosetta Stone with that of Cleopatra on the Philensian obelisk, he was enabled to lay the foundation of an alphabet, which he continued to elaborate until it became the basis of modern Egyptian archæology. His first decisive discoveries were made known in his celebrated *Lettre à Mons. Dacier* (Par. 1822), followed by the *Précis du Système Hiéroglyphique* (Paris, 1824; second ed. 1828); but his principal work, the *Grammaire Egyptienne*, was posthumously published 1836.

In 1824, appeared his *Panthéon Egyptien;* in 1825 his celebrated letters to the Duc de Blacas, in which he explains the names and the titles of many of the Pharaohs, inscribed on the monuments in Drovetti's Egyptian Collection at Turin, and attempts to class them into dynasties. His theory of *interpretation* was much controverted at first, but its importance was recognized by such distinguished scholars as Rosellini, Bunsen, Sir William Gell, and others.

In 1828 he was appointed by Charles X. to accompany a scientific expedition to Egypt, of which the results were given by Rosellini in the *Monumens de l'Egypte et de la Nubie* (Par. 1835–45). On his return to Paris, 1830, Champollion was made a member of the *Académie des Inscriptions,* etc.; and in the following year was appointed to the new chair of Egyptian antiquities in the College of France; but soon after the commencement of his intended course of lectures, 1831, May, he fell ill and died. According to Silvestre de Sacy, 'few men, since the birth of letters, have rendered to erudition services equal to those which have consecrated to immortality the name of Champollion.'

CHAMPOLLION-FIGEAC, *shŏng-pol-yōng′-fe-zhâk′,* Jean Jacques: archæologist: 1778–1867, May; b. Figeac, dept. of Lot, France; older bro. of Jean François Champollion. After holding in Grenoble the offices of librarian and professor of Greek literature, he was appointed, 1828, conservator of MSS. in the imperial library in Paris, but, after the February revolution, was deposed by Carnot. In 1849, he was appointed, by Louis Napoleon, librarian of the palace of Fontainebleau. Beside the *Antiquités de Grenoble* (1807), his chief works include the *Annales des Lagides and Egypte Ancienne* (forming a part of *L'Univers Pittoresque*); *Les Tournois du Roi René,* a splendid work, with lithographs by Motte; and several publications of old French documents. After the death of his younger and more celebrated brother, Champollion was employed in editing the MSS. left by that distinguished scholar, and has given an account of them in the *Notice sur les Manuscrits Autographes de Champollion le Jeune* (Par. 1842).

CHANAK-KALESSI, *shâ-nâk′kâ-lĕs-sē′* [Turk., Pot Castle]: town of Anatolia, named from its manufactures of crockery; on the Dardanelles, about 28 m. s.w. of Gallipoli. Its castle is the most important on the Dardanelles, and the name Dardanelles is sometimes given to the town itself. Pop. 3,000 or 4,000.

CHANCE, n. *chăns* [F. *chance,* chance—from OF. *chéance;* It. *cadenza*—from mid. L. *cadentĭă,* that which falls out fortunately—from L. *cadĕrĕ,* to fall, used in dice-playing]: that which happens in virtue of laws of whose operations we are more or less ignorant; an unforeseen event; accident; what fortune may bring; an opportunity: V. to happen; to occur without design; to risk: Adj. casual; accidental. Chan′cing, imp. Chanced, pp. *chănst.* Doctrine of chances, the important theory which has for its object the determination of the number of ways in which a future or uncertain event may happen or fail,

whether the *chances* of its happening or failing are the greater, and in what proportion.—Syn. of 'chance, n.': fortune; fate; probability; hazard; fortuity; casualty; opportunity.

CHANCE, in philosophy, the falling out or happening of events, luck or fortune, an unexpected event (see Accident; 'I met him by *chance*,' opportunity; 'now is your *chance*,' risk; 'I will take my *chance*,' possibility or probability of events; 'the *chances* of death,' an event occurring without cause, reason, or any conceivable ground; absolute contingency, '*chance* governs all.' A certain philosophical theory, called *Tychism* maintains that absolute chance is a factor in the constitution of reality. If this were true, then so far the world would be absolutely irrational, and, if we admit the slightest amount of absolute contingency the notion of *order* in nature must itself be a result of chance. It is a fundamental principle of all scientific investigation that what we commonly call chance is a name for our ignorance of the true causes or reasons for things. The successes of scientific theory and practice would seem to indicate that there can be in reality no absolute contingency or chance, and that the latter term can be legitimately used only to express the greater or less probability of an occurrence where we are in partial ignorance of the actual conditions thereof. For what is sometimes called the *Doctrine of Chances*, but is more properly the *Theory of Probabilities*, see Probability.

CHANCEL, n. *chăn'sĕl* [F. *chancel*—from L. *cancelli*, lattices or railings with which the chancel was inclosed]: grating separating the choir from the nave; that part in a church where the altar is placed. The chancel choir, or eastern part of a church, was often separated from the nave by a screen of lattice-work, so as to prevent general access thereto, though not to interrupt either sight or sound. As it was in this part of the chancel that the service was always performed previous to the reformation, the clergy were in England held to have a special right to it, in return for which its repairs in general still fall on the impropriator, rector, or vicar, and not on the parish. The chief pew in the chancel belongs to the rector or impropriator, but the disposal of the seats in the church, with this exception, belongs to the ordinary, or, practically, to the church-wardens, to whom the authority of the ordinary is delegated. No monument, moreover, can be set up without the ordinary's consent. The term chancel is usually confined to parish churches which have no aisles around the choir, or chapels behind it or around it; and in this case the chancel and the choir have the same signification. But in larger churches there are sometimes chancels at the ends of the side aisles, and this whether the choir has the character of a choir in the larger sense, or of a chancel: see Church.

CHANCELLOR, n. *chăn'sĕl-ėr* [F. *chancelier*—from mid. L. *cancellārĭŭs*, an usher, a notary, a chancellor—from L. *cancelli*, lattices, as anciently sitting behind them (see Chancel)]: a judge or officer in a court who possesses the

highest power and dignity; the highest honorary officer of a university (see UNIVERSITY); a dignitary of a cathedral; superintendent of arrangements for celebrating the religious services—an office distinct from that of chancellor of a diocese, who is a lawyer officially attached to an episcopal court (see CHANCELLOR OF A DIOCESE). CHAN'-CELLOR-SHIP, n. the office of a chancellor. CHAN'CERY, n. *-sėr-ĭ* [OF. *chancellerie*—from mid. L. *cancellārĭă*, a place where public records were kept]: the high court of equity in England and Ireland, presided over by the lord chancellor. CHANCERY (or CHANCELLARY) OF SCOTLAND, public office at Edinburgh, for registration of charters, patents of dignity, gifts of offices, remissions, legitimizations, presentations, commissions, brieves, retours, and other writs appointed to pass the great seal are recorded (see GREAT SEAL). LORD HIGH CHANCELLOR, a lawyer and peer of the realm who presides in the house of lords—is keeper of the great seal, a cabinet minister, and keeper of the sovereign's conscience, has an extensive jurisdiction in his judicial capacity, and is next in precedence to the royal family after the archbishop of Canterbury. CHANCELLOR OF THE EXCHEQUER, a cabinet minister in England whose chief office is the practical management of the revenue, and who must be a member of the lower house: see EXCHEQUER.

CHAN'CELLOR: high officer of state having various functions; in law, the highest judge or official in a court of equity. It is said that the chief notary or scribe of the Roman emperor was called chancellor, either because he was intrusted with the power of obliterating, *cancelling*, or *crossing out* [*cancellare*, to make lattice-work] such expressions in the edicts of the prince as seemed to him to be at variance with the laws, or otherwise erroneous; or because he sat *intra cancellos*, within the lattice-work or railings (*cancelli*) erected to protect the emperor from the crowding of the people when he sat in judgment. The title and the office of chancellor are found in various countries. The Chancellor of France (Chancellier de France), from a very early time, was an officer of state of great power and dignity, under whom several other officers, bearing also the title of chancellor, were employed in the administration of justice and in the defense of the public order. The Chancellor of France was the constitutional interpreter of the will of the sovereign; his functions being on the whole analogous to those exercised by the Chancellor of England. It indicates the change of the value of money, that, in 1290, the salary of this high official was six sous a day, with the privilege, to him and his, of eating at the court. When he was at Paris, and ate at his own lodgings, he had twenty sous a day. The office was abolished at the revolution, and though it was restored by the Bourbons, and even under the first Napoleon the higher-sounding title of archi-chancellier was revived, many of the functions of the old chancellor were transferred to the minister of justice, and have ever since been held by him.

In most of the other countries of Europe there are officers

of state who bear this, or analogous titles, though their powers and duties are very various. The chief functionary in the Austrian Empire has often been termed chancellor; and on the reconstitution of the German Empire, Prince Bismarck was made Chancellor of the Empire (*Reichskanzler*). Besides these state-chancellors, there were officers in many other capacities to whom the title was given. Every bishop has his chancellor in the Church of Rome, and there are still law chancellors of cathedrals, dioceses, universities, etc.

In some of the United States this officer as a judge of equity was created by constitutional provision; but in several of these the office has been abolished, and its functions have been variously assigned: see CHANCERY, COURT OF.

CHANCELLOR, LORD, or LORD HIGH: keeper of the great seal, an officer of very high dignity, and a judge of extensive jurisdiction. The existence of the office in England, as in the other states of Europe, is usually ascribed to the influence which the constitution of the Roman empire had on the constitutions of the modern nations. This influence was exercised in no small measure through the medium of the church, the profession of the law being generally exercised by ecclesiastics; and it is for this reason, probably, that the bishop and the king are furnished with officers bearing the same title, and exercising analogous functions. The chancellor is always the confidential adviser of the sovereign in state affairs. For this reason he has been called the keeper of his conscience; and in England to him the duty was intrusted of presiding over a court which acted on what were called—by way of distinction—equitable considerations. It is in this latter prerogative chiefly that the English chancellor is distinguished from all other judges; for, while they are held by the letter of the law, he was at one time supposed to act rather *juxta bonum et æquum*. In certain more special points of view, there is a similarity between the functions of the chancellors in different countries. 'In all of them he seems to have had the supervision of all charters, letters, and such other public instruments of the crown as were authenticated in the most solemn manner; and therefore, when seals came into use, he had always the custody of the sovereign's great seal.'—Stephen's *Commentaries*, vol. iii., p. 398. Therefore, the office of Chancellor, or Keeper (q.v.)—which, by 5 Elizabeth, c. 18, is declared to be exactly the same—is created without writ or patent by the mere delivery of the great seal, and that the chancellor, if a baron, takes precedency of every temporal lord not a member of the royal family and of all bishops except the Abp. of Canterbury. The chancellor is a privy-councillor by his office and a member of the cabinet, and prolocutor, or speaker, of the house of lords, by prescription. Though the form in which his tenure of office is terminated, is by the resumption of the great seal by the sovereign, the chancellor practically resigns office with the party to which he is attached. He has

the appointment of all justices of the peace throughout the kingdom, though this privilege he exercises usually on the recommendation of the lord lieutenants. But the most important, and, as it now seems, somewhat anomalous branch of his patronage, arises from his having been originally an ecclesiastic. Though the last bishop who held the office was John Williams, Abp. of York, lord keeper 1621, July 10—1625, Nov. 1, the chancellor still continues to be patron of all the crown livings of the value of £20 per annum, or under (though in 1863 about 300 were sold to augment the incomes of those sold and those retained), and visitor of all hospitals and colleges of the king's foundation. As representing the paternal character of the sovereign, the chancellor is the general guardian of all infants, idiots, and lunatics, and has the supervision of all charitable uses in the kingdom. As regards his judicial patronage, the arrangement is, that the chancellor appoints in general all the judges of the superior courts, except the two chief-justices, who are nominated by the prime-minister of the day. Of inferior appointments, the prime-minister has reserved to him also the commissioners of bankruptcy and the judges of the county courts. All these functions the chancellor performs in addition to his extensive duties as the supreme judge of the court of chancery, both as an ordinary court of common law and of record, and as an extraordinary court of equity. Much inconvenience has arisen from the accumulation of duties in the single person of this high dignitary, and various expedients had been devised for lessening the evil. Vice-chancellors had been appointed, and the duties of the master of the olls had been extended. In 1875 a considerable change was made by consolidating all the vice-chancellors' courts into one division, called the chancery division of the high court. And the chancellor's duties in the house of lords as the highest appeal court were lightened in 1876. The proposal of a minister of justice has, however, not yet found favor. The salary of the chancellor is £10,000 a year, and he has an annuity of £5 000 on his retirement from office. The style of the chancellor, since the union with Scotland, has been lord high chancellor of Great Britain; but he has scarcely any jurisdiction in Scotland, and in Ireland there is a separate chancellor, having powers in most respects the same as those of chancellor of Great Britain. To slay the chancellor is treason under 25 Edward III. c. 2.

CHANCELLOR OF A DIOCESE: vicar-general to the bishop; an ecclesiastical judge, appointed to assist the bishop in questions of ecclesiastical law, and hold his courts for him. In England it is provided that the chancellor of a diocese may be a layman, whether married or single, provided he be a doctor of the civil law, lawfully create and made in some university. By the canons of 1603, he must be a bachelor of law, at the least, or a master of arts. There are certain cases, however, in which the bishop must sit in person. In case of complaint against a clerk in holy orders, for any ecclesiastical offense against

the church discipline act (3 and 4 Vict. c. 86), the bishop is to hear the cause, assisted by three assessors; of whom the dean of his cathedral, or one of his archdeacons, or his chancellor, must be one; and a sergeant-at-law, or advocate who has practiced 5 years in the court of the archbishop of the province, or barrister of 7 years' standing, must be another.

CHANCELLOR, Charles Williams: American physician: b. Spottsylvania co., Va., 1833, Feb. 19. He studied at Georgetown College, and the University of Virginia, 1848–52, and was graduated at Jefferson Medical College, Philadelphia, 1853. During the Civil War he was medical director of Gen. Pickett's division in the Confederate army, 1863–5. He was professor of surgery in and dean of Washington University, Baltimore, 1868–75; secretary of the Maryland State board of health, 1875, president of the Maryland State Insane Asylum, 1880; and United States consul at Havre, France, 1893–7. Among his numerous reports and articles on medical and sanitary topics are the following: *Report upon the Condition of the Prisons, Reformatories, and Charitable Institutions of Maryland* (1875); *Contagious and Infectious Diseases* (1878); *Mineral Waters and Seaside Resorts* (1883); *Drainage of the Marsh Lands of Maryland* (1884); *Heredity* (1886); *Sewerage of Cities* (1886); *Climate of the Eastern Shore of Maryland.*

CHANCELLOR OF SCOTLAND: official who, previous to the union of the two kingdoms in 1707 (when the office was abolished), performed functions in many respects analogous to those of the lord high chancellor of Great Britain. The distinction between law and equity in the English sense never having been recognized in Scotland, the chancellor had no judicial functions separate from those of the ordinary courts of law, but he had the principal direction of the chancery (q.v.). In early times, the Chancellor of Scotland, as of England, was very frequently an ecclesiastic: but the first chancellor, Constantine, Earl of Fife, in the reign of Alexander I., and the last, the Earl of Seafield, who held the office at the Union, both were laymen; and many other nobles, Earls of Argyle, Angus, Huntly, etc., appear in the lists given in Crawford's *Officers of State,* and Chalmers's *Caledonia.* On the abolition of the office, a keeper of the great seal was appointed, who acts merely ministerially in affixing it to the writs which pass under it: see Great Seal.

CHANCELLORSVILLE, *Chăn'sel-ērz-vĭl,* Battle of: 1863, May 1-4, including the engagements at Mary's Heights May 3, and Salem Church May 3-4. Gen. Hooker, commanding Union army had, exclusive of cavalry, about 118,000 men on the north bank of the Rappahannock, opposite Fredericksburg, which place was held by Gen. Lee with 60,000 men, not including cavalry. Lee's position was too strong to warrant a direct attack, so Hooker, in the latter days of April, sent Gen. Stoneman, with 10,000 cavalry, to cut Lee's communications with

Richmond; feinted a crossing of the river below Fredericksburg, and on April 27 marched the 5th, 11th and 12th corps 25 m. up the river, crossed it and the Rapidan, was joined by two divisions of the 2d corps that had crossed at United States ford, and at night of the 30th had concentrated 71,000 men at and near Chancellor's, a farm clearing in the wilderness, 11 m. west of Fredericksburg, and 65 n. by w. from Richmond. The march was resumed on the morning of May 1, and the head of column reached the open country when it encountered Lee, who had marched with 48,000 men, the greater part of his army, from Fredericksburg to oppose him. Hooker fell back and threw up works in the dense woods surrounding Chancellor's. There was some sharp skirmishing during the day, but no general engagement. At night he was joined by the 3d corps; the 1st corps came on the field during the night of the 2d. On the 2d, Stonewall Jackson, with 30,000 men, under cover of dense forest, made a long march across Hooker's front, reached his right flank, and late in the day surprised and routed Howard's 11th corps. Jackson's success was checked at nightfall, and at 9:20 P.M. while reconnoitering his front, Jackson was mortally wounded, a great loss to the Confederate cause. Gen. A. P. Hill, also, was wounded, and the command on that part of the field fell to Gen. J. E. B. Stuart. Stuart pressed the fighting on the morning of the 3d. Lee with about 18,000 men attacked the Union line in front of and around Chancellor's; he and Stuart drew near each other as progress was made, and at 10 A.M. the Confederates were again united. Lee now made a concentrated attack; the losses were frightful; Hooker was stunned by a solid shot, and the Union forces fell back to a good defensive position, marked out by the engineers the night previous. Lee was about to press his advantage, but desisted when he heard that a large Union force was advancing upon his rear from Fredericksburg. This Union force of 23,000 men was under command of Gen. Sedgwick, who had crossed the river below Fredericksburg May 2, carried Mary's Heights, held by Gen. Early with 8,500 men, on the 3d, and pushed on to Salem Church, where he was checked at dark by Early. On the 4th he was attacked by 21,000 men that Lee had sent back from Chancellor's, was fought to a stand and finally compelled to recross the river at Bank's ford during the night, with a loss of 3,200 killed and wounded, and over 1,450 captured. Lee then again reunited the greater part of his army in Hooker's front, with the intention of renewing the battle on the morning of the 6th, but when morning came Hooker had gone; he had recrossed the Rappahannock at United States ford during the night of the 5th, and marched back to his old camps opposite Fredericksburg. Gen. Stoneman's movement with the cavalry on Lee's communications was also a failure.

The Union loss at Chancellor's was 1,082 killed, 6,849

wounded, and 4,214 missing. Including the losses at Fredericksburg, Mary's Heights, and Salem Church, the Union loss in the entire campaign was 1,606 killed, 9,762 wounded, and 5,919 missing, an aggregate of 17,278. The Confederate loss during the campaign was 1,665 killed, 9,081 wounded, and 2,018 captured, an aggregate of 12,764.

CHANCE-MEDLEY, n. *chăns mĕd'lĭ* [F. *chaude meslée* —from *chaud*, hot, and *meslée*, bickering, fight]: an accidental conflict not prepared beforehand; in *law*, unintentional homicide in self-defense, or on a sudden quarrel; in *OE.*, a mixture made at haphazard.

CHANCE-MEDLEY, and CHAUD-MEDLEY, *shōd'-mĕd-lĭ*, or (in Scotland) MELLE [Fr. *chaud*, hot, and *melée*, a fray]: French expressions borrowed in English law. Though often spoken of as synonymous, they are distinct in meaning—the first signifying a casual affray; the other, an affray in the heat of blood or passion. Both are in most countries recognized as pleas in mitigation of the offense of *homicide* (q.v.): see also SANCTUARY.

CHANC'ERY: official establishment of a chancellor (q.v.). As the Roman emperors, and after them the various sovereigns who divided the vast inheritance of the empire, had each a chancellor (q.v.), so in every European kingdom there was an establishment called a chancery, where these officers performed their functions. If we imagine a large chamber divided by lattice-work (*cancelli*), the outer half devoted to the people, the inner occupied by the chancellor and his subordinates, engaged in framing edicts, letters of nobility, and the like, and engrossing them on parchment, and sealing them with the king's own seal in proof of their authenticity, and then handing them through the railings to the people without, we shall have some conception of the chancery in its earliest form.

In France, as there were subordinate chancellors attached to the parliaments of the respective provinces, so there were subordinate chanceries; but the grand chancery of France, which followed the person of the king, was alone, in strictness, entitled to the name.

The apostolic chancery at Rome, in which, in addition to the documents pertaining to his temporal sovereignty, the bulls and briefs of the pope are authenticated, is presided over by a cardinal, with the title of vice-chancellor.

CHAN'CERY, COURT OF (see CHANCELLOR]: high court of equity. In England, besides the function pertaining to the chancellor in other countries the chancellor had early assigned to him the office of a judge; and the English chancery consequently became a court of law, the peculiar character of which will be rendered intelligible by the following considerations: In assigning judicial functions to the chancellor's department, it was not intended that it should interfere with that other department of government which has everywhere been distinguished both from the legislative and the executive—viz., the judicial. But in

all departments, according to the imperial theory from which the idea of the chancery at least was derived, the sovereign was supreme, and to his will, or to his sense of justice, there was consequently an appeal in judicial, as in other matters. His chancellor, however, was his adviser in all matters whatsoever; and thus, though not a judge in the stricter sense, it is manifest that his counsel, in judicial matters of the highest importance, would constantly be called in. But further, the king governed by laws, even before he was governed by them; and for the sake of order and his own convenience, he would naturally add to or supplement the law which he had established, only where it could be shown to him that it did not meet the substantial justice of the particular case. He would consequently be a judge, not of the interpretation or application of the law, which he would leave to his ordinary judges, but of its adequacy to circumstances which had changed, or had not been anticipated; and when he interfered, it would be to some extent in the character of a legislator, as well as of a judge. The king would thus be a judge in equity, in the popular and intelligible sense of that word; and acting in this capacity himself, it would be in this capacity that he would call in the aid of his chancellor. It is not mysterious, then, how in early times, the court of chancery came to be a court of equity; and the chief difficulty regarding its origin seems to attach to the other of the two great departments into which it is divided, and in which it exercises jurisdiction as a court of common law. But as the free constitution of England developed itself, it soon became apparent that equity, in the old despotic or patriarchal sense—in which it was not so much the administration as the making or modifying of law—was inconsistent with its principles, whether it proceeded from a judge or from the monarch himself. The popular sense of equity was consequently abandoned; and a technical sense, unknown to the jurisprudence of every other nation, was given to it. The proceedings of the court of chancery 'on its equity side,' which had hitherto been a mere supplement to law, came now to be hedged in by rules and precedents as closely as those of any court of common law. What henceforth continued to be the distinction *in principle* between law and equity, or between the functions of the courts of common law and the court of chancery, or even of the two great departments of this court itself, it is perhaps impossible to state. For the arbitrary line which has been drawn between the class of cases assigned to the one set of courts and to the other, see EQUITY.

In England, the judicial duties of the chancellor have long been shared by the master of the rolls (q.v.), an officer of high rank, originally appointed only for the superintendence of the writs and records appertaining to the common law departments of the court, but who was accustomed also to sit as a separate though subordinate judge on the equity side; and who now hears motions, pleas, and demurrers, as well as causes generally. His salary is £6,000 a year. The

vast increase of business caused the appointment, 1813, of another assistant to the chancellor, under the title of the vice-chancellor of England; and in 1841, when the equity business of the exchequer was transferred to the chancellor, two more vice-chancellors were added, judges sitting separately from the lord chancellor—each with annual salary of £5,000. Another important addition (14 and 16 Vict. c. 83) was that of the lords justices of the court of appeal for all courts. A court consists of the lord chancellor, together with these judges; but the lords justices, when sitting without the chancellor, possess the same jurisdiction which belongs to him, and their existence does not prejudice his right to sit alone. The lords justices have the same authority in matters of lunacy as the chancellor; and they, sitting together, constitute, without the chancellor, the court of appeal in bankruptcy. An appeal, which may be entertained also by the lord chancellor sitting alone, lies to this court from all the separate courts of the chancery division; and from this appellate jurisdiction there is an appeal in turn to the house of lords. The lords justices may also take up original causes, though these, in practice, are mainly confined to the divisional courts of the high court. Till recently, certain parts of the equitable jurisdiction of the court of chancery were confided to the masters in ordinary (see MASTERS IN CHANCERY) and the accountant-general. The office of the masters has been abolished, but that of the accountant continues one of the most important connected with the court.

The subdivision of courts into those of equity and common law had long been found mischievous, inasmuch as it in some cases doubled the expense to the suitor, by sending him from one court to another for instalments of the justice which he sought. For the changes under the judicature acts of 1873–76, and the constitution of the new high court of justice, see COMMON LAWS. The chancery court is now the chancery division of the reconstituted high court.

On the continent of Europe the English court of chancery has always been a subject of ridicule, and a recent French writer, in speaking of it, says: 'Nothing ever comes to an end in it; and the unhappy man who has a process there, can be sure of but one thing—viz., that whether he gains it or loses it, his ruin is certain.' The acts by which evils inseparable from the constitution of the court of chancery—and which spring from the distinction between law and equity, on which its very existence depended—had been mitigated, were the following: 15 and 16 Vict. cc. 80, 86, and 87; 21 and 22 Vict. c. 27; 23 and 24 Vict. cc 38, 128; 25 and 26 Vict. c. 2; and 36 and 37 Vict. C. 66. This last is known as the English Judicature Act, and the High Court of Chancery of England, the Court of Queen's Bench, the Court of Common Pleas at Westminster, the Court of Exchequer the High Court of Admiralty, the Court of Probate, the Court for Divorce and Matrimonial Causes, and the Lon-

don Court of Bankruptcy were united and consolidated into 'one Supreme Court of Judicature in England,' and it enacted that in every civil cause or matter, law and equity shall be concurrently administered, but in those matters in which there is any conflict or variance between the rules of equity and the rules of the common law, with reference to the same matter, the rules of equity shall prevail. In various colonies of the British empire local courts have been established in imitation of the high court of chancery. In the federal courts of the United States not only are both the principles of the high court of chancery recognized in the administration of equity, but the administration of chancery doctrines under chancery forms is uniform throughout the union. At the time the Constitution was formed the distinction between law and equity as known in the country from whence our ancestors came was recognized by the Constitution; and the courts of the United States have uniformly held that the rules of decision in equity cases were the same in all the states, and they are the equity law which we derived from England. Hence the courts of the United States do not lose their equitable jurisdiction in those states where no such courts exist, but on the contrary administer equitable remedies in cases to which they are applicable and which are not adapted to a common-law action.

The court of equity, having existed as a separate tribunal for so many centuries, has at length disappeared in Great Britain and in most of the American states, and the reforming tendency of the present age is strongly towards an obliteration of the lines which have hitherto divided the two jurisdictions. By the recent legislation of England and of many of the states of this country, the separate tribunals of law and of equity have been abolished; the two jurisdictions have been so far combined that both are administered by the same court and judge; legal and equitable rights are enforced and legal and equitable remedies are granted in one and the same action; and the distinctions which hitherto existed between the two modes of procedure are as far as possible abrogated, one kind of action being established for all judicial controversies. See Pomeroy on *Equity Jurisprudence.*

CHANCRE, n. *shăng'kėr* [F. *chancre*—from L. *cancrum*, or *cancer*, a crab, a cancer]: a venereal ulcer (see SYPHILIS). CHANCROUS, a. *shăng'krŭs*, ulcerous.

CHANDAH, or CHANDA, *chăn'da:* town of India, on the s.w. frontier of the territory of Nagpore, on the left bank of the river Eraee, near its junction with the Wurda, 90 m. s. of the town of Nagpore. Its walls, of cut stone, with a high parapet, are 6 m. round, from 15 to 20 ft. high, and flanked with round towers, large enough for the heaviest guns. Within the place, and almost equi-distant from the n. and s. faces, is a citadel; the rest of the interior consists of straggling streets, detached houses, and plan-

tations. It is well supplied with water. In 1818, C. was taken by the British. Pop. 17,000.

C. is cap. of a British administrative dist. having (1901) 10,785 sq. m. Pop. 700,000.

CHANDALA, *chăn-dâ'la:* class among the Hindus deemed the lowest and the most polluted, according to their rule of caste (q.v.).

CHANDELEUR ISLANDS, *shăn-de-lôr':* in the Gulf of Mexico, and about 65 m. n. by e. of the mouth of the Mississippi, off the coast of La., from which they are separated by C. Sound. At the n. end of the northernmost island is C. lighthouse, lat. 30° 3′ n., long. 88° 52′ w.

CHANDELIER, n. *shăn-dĕ-lēr'* [OF. *chandelier*, a dealer in candles—from mid. L. *candelārĭŭs*, a chandler—from L. *candēla*, a candle]: a hanging branched lamp.

CHANDERNAGORE, *shân-der-na-gōr'*, or CHANDERNAGAR, *shân-der-na-gâr':* French colonial city, with a scanty territory of about 2,000 acres, on the right or w. bank of the Hoogly, 21 m. above Calcutta by railway, on the opposite shore; lat. 22° 50′ n., long. 88° 23′ e. The population consists of a few Europeans and Eurasians, the great bulk being natives of unmixed blood. Independently of political considerations, the place has, through the gradual silting up of the river, lost some of its commercial advantages. Within 100 years, ships of the line have ascended to Chandernagore; now, however, vessels even of far inferior burden seldom pass above Diamond harbor, which is nearly 50 m. further down. Chandernagore was established 1676, and for a while rivalled Calcutta. It was captured by Clive 1757, but finally restored to the French 1816. Pop. abt. 30,000.

CHA DHAIREE, *chand-hī-rĕ'*, or CHANDERI: town of Gwalior, India, in a hilly and jungly district, near a tributary of the Jumna. It is much decayed on account of Mahratta oppression, the scourge of war, and the decay of its manufactures, which are undersold by the cheaper fabrics of Britain; but the extent and architectural excellence of its ruins indicate its splendor and importance in former times, when it is said to have contained 14,000 stone houses, 384 markets, 360 caravanseries, and 12,000 mosques. The fort of Chandhairee, formerly deemed impregnable, consists of a strong rampart of sandstone, flanked by circular towers, and is on a high hill. Among the remains of former greatness, is a pass cut through a solid rock 100 ft. high. During the native wars, being a place of importance, Chandhairee was frequently besieged. Under Mahratta sway, it became a haunt of freebooters, very troublesome to the native districts under British rule or protection; and on the conclusion of the treaty of 1844, it was, with other lands, assigned for the maintenance of the increased Gwalior contingent, commanded by British officers.

CHANDLER, n. *chănd'lĕr* [Ger. *handler*, a dealer in small-wares]: a maker of candles, or dealer in them; a

dealer or shopkeeper; a dealer, as *corn-chandler*. CHAND'LERY, n. -ĭ, goods sold by a chandler.

CHANDLER, ABIEL, American merchant: b. Concord, N. H., 1778; d. Walpole, N. H., 1851, March 22. He was graduated at Harvard College in 1806, and was for many years a merchant in Boston. He died a widower, without children, and devised $50,000 to Dartmouth College. The Chandler School of Science at Dartmouth was established in 1851 in pursuance of this bequest. For many years it was maintained as a separate department, but has recently been formally incorporated into the college, and it is now known as the Chandler scientific course leading to the degree of bachelor of science.

CHANDLER, CHARLES FREDERICK, American chemist: b. Lancaster, Mass., 1836, Dec. 6. He studied at the Lawrence Scientific School of Harvard College, and at the universities of Berlin and Göttingen, receiving his doctor's degree at the latter in 1856. He was professor of chemistry in Union College, 1857–64, and professor of analytical and applied chemistry in the Columbia College School of Mines, 1864–1903. In 1858 he was elected to the chair of chemistry in the New York College of Pharmacy, and in 1876 to the chair of chemistry and medical jurisprudence in the College of Physicians and Surgeons. He became chemist to the Metropolitan Board of Health in 1865, and its president in 1873, being instrumental in securing great reforms in connection with the sanitary condition of the markets and the purity of the food-supply, notably in the case of milk. He is a member of the chemical societies of Berlin, London, and Paris, and of the National Academy of Sciences. With his brother, Prof. W. H. Chandler, he founded the *American Chemist*, a monthly journal devoted to chemical science. To this and to the annual reports of the New York health department he has contributed many papers on chemistry, water-supply of cities, purification of coal gas, on petroleum, milk, sorghum, and glucose.

CHANDLER, ELIZABETH MARGARET, American poet: b. near Wilmington, Del., 1807, Dec. 24; d. 1834, Nov. 22. Her most popular poem was *The Slave Ship*. Many of her subsequent verses were written in the same strain, and published in the *Genius of Universal Emancipation*, a Philadelphia abolitionist periodical. Her poems were published with a memoir by Benjamin Lundy (1836).

CHANDLER, FRANK WADLEIGH, American writer: b. Brooklyn, N. Y., 1873, June 16. He graduated at the Polytechnic Institute of Brooklyn, 1894; studied literature and philosophy at Columbia University, and at Oxford, London, and Paris, 1895–9. Since 1899 he has been professor of literature and history in the Polytechnic Institute, and from 1901–4 lecturer in comparative literature at Columbia. He has written *Romances of Roguery, an Episode in the History of the Novel* (1899), and *Some Theories of the Novel's Evolution in East and West* (1900).

CHANDLER, John: 1806, June 16—1876, July 1: one of the earliest and best translators of Latin hymns into English; b. Witley, Surrey, England. He graduated at Corpus Christi College, Oxford, 1827; became curate to his father at Witley, 1831, and was vicar there from 1837. His *Hymns of the Primitive Church*, 1837, contributed largely to the collections of the Church of England and of other bodies, and many of its 108 renderings are still used on both sides of the ocean; they are plain, simple, solid, effective, and at times beautiful. A few more were added in a small volume, *Hymns of the Church* (1841); both books are rare. C. wrote also a *Life of William Wykeham* (1842), *Horæ Sacræ* (1854), and some sermons and tracts.

CHANDLER, Joseph Ripley: 1792, Aug. 25—1880, July 10; b. Kingston, Mass.: journalist. After serving as clerk at Boston he removed to Philadelphia about 1815, opened a school, which he continued for some ten years, and published *A Grammar of the English Language*, 1821. He was editor of the *United States Gazette*, 1822–47, and raised it to prominence; was a city councilman 1832–48, a delegate to the Penn. constitutional convention 1836, in congress as a whig 1849–55, and minister to Naples 1858–60. Mr. C. was active in prison reform, and published several addresses, orations, etc. He died in Philadelphia.

CHANDLER, Richard: 1738–1810, Feb.; b. Elson, Hampshire: Eng. antiquary. He was educated at Oxford. He became known as the editor of the magnificent work, *Marmora Oxoniensia*, pub. by Oxford Univ. 1763. He afterward travelled through Greece and Asia Minor, with Revett, an architect, and Pars, a painter, at the instance of the then flourishing Dilettanti Society, to collect information regarding the former state of these countries, and to procure exact descriptions of the ruins. The result appeared 1769, in two vols., entitled *Ionian Antiquities*. C. published also a valuable account of the ancient inscriptions of Asia Minor and Greece; and his account of his travels in these countries, issued in 1775–76, is still standard. He published also a *History of Troy*.

CHANDLER, Seth C., American astronomer: b. Boston, Mass., 1845, Sept. 16. He is well known for his investigations and observations of the phenomena of variable stars, the computation of comet orbits, and, in connection with Ritchie, for devising a system of astronomical code-telegrams for the announcement of astronomical discoveries. He also invented the Almucantar, and published a very complete treatise on the method of its use. He is best known for his exhaustive investigations of the variation of terrestrial latitudes.

CHANDLER, William Eaton, American politician: b. Concord, N. H., 1835, Dec. 28. He was graduated at Harvard Law School in 1855, entered the New Hampshire legislature in 1862, became judge-advocate-general

of the navy department in 1865, and secretary of the navy in 1882, serving three years. In 1887–1901 he was a United States senator from New Hampshire. Since 1901 he has been president of the Spanish Treaty Claims Commission.

CHANDLER, Zachariah: 1813, Dec. 10—1879, Nov. 1; b. Bedford, N. H.: senator. He was a farmer's son, and is said to have chosen $1,000 rather than a college education. He settled at Detroit 1833, acquired wealth as a merchant, became prominent in whig politics, supported the abolitionists' 'underground railroad,' was elected mayor 1851, and defeated for gov. 1852. He was active in organizing the republican party 1854, and continued one of its leading spirits. His career in the United States senate began 1857 and lasted till 1875; there he opposed the admission of Kansas under the Lecompton constitution, 1858, Mar. 12, and joined Ben. Wade in stoutly resisting the slave power. His 'blood letter' to Gov. Blair of Mich., 1861, Feb. 11, showed him to be a radical extremist, but events proved him a true prophet. In the same spirit he expressed regret that Pres. Lincoln had not called for 500,000 men at once instead of 75,000, and for a longer term in place of three months. He vigorously supported the war, brought in a bill for the confiscation of rebel property 1861, July, attacked Gen. McClellan 1862, July, and contributed to Lincoln's re-election 1864. He was chairman of the committee on commerce for many years, a member of other important senate committees, chairman of the republican national committee 1868 and 1876, sec. of the interior 1874–77, and was again in the senate 1879, to fill a vacancy; here he denounced Jefferson Davis, Mar. 2. He delivered an earnest speech in Chicago, Oct. 31, and was found dead in his room the next morning.

CHANDLER SCIENTIFIC DEPARTMENT: see Dartmouth College.

CHANDORE, *chăn-dōr':* town and fort in the dist. of Nassick (q.v.), presidency of Bombay; lat. 20° 20′ n., long. 74° 14′ e. Chandore is a flourishing place. The fort, which commands an important pass on the route between Candeish and Bombay, is on the summit of a hill naturally inaccessible everywhere but at the gateway. It surrendered to the British in 1804; and being subsequently restored to Holkar was finally ceded by him 1818. Pop. abt. 6,000.

CHANDOS CLAUSE, *chăn'dos:* clause proposed by the Marquis of Chandos (tory—afterward Duke of Buckingham), during the discussion of the clauses of the Reform Bill (q.v.) 1831, in the Brit. parliament. It gave the county franchise to *tenants at will* occupying lands for which they paid an annual rent of £50. This was opposed by the ministers on the ground that the class proposed to be enfranchised would be subject to the coercion of the landowners, who would thus virtually determine

the elections. The amendment, however, was supported by many of the radicals, who at that time regarded any extension of the suffrage as a boon, and was carried by a majority of 84. The clause was incorporated in the bill of the following year, and was finally carried by a majority of 272 to 32. The result proved a material accession to the conservative element in counties. Under the Reform Act of 1867, occupants of lands of a ratable value of £12 are entitled to the county franchise.

CHANFRIN, n. *shăn'frĭn*, or CHANFRON, *shăn'frŏn*, or CHAFFRON, n. *shăf'rŏn* [F. *chanfrein*]: fore part of a horse's head extending from under the ears along the interval between the eyebrows and the nose; the armor or mask for such a part (see CHARGER); the corresponding part in other animals.

CHANGARNIER, *shŏng-gâr-ne-ā'*, NICOLAS ANNE THÉODULE: 1793–1877, Feb.; b. Autun: French general. He received his education at the military school of Saint-Cyr. In 1830, he went as lieut. to Algeria, where he distinguished himself and rose to the rank of gen. of division. After the proclamation of the republic, 1848, he was appointed governor-general of Algeria, in the place of Cavaignac; but being chosen a member of the national assembly, he returned to Paris, when he was appointed commander-in-chief of the garrisons of Paris and of the national guard. He held this double office till 1849, May, and again for some time after the insurrectionary movements of June. Changarnier was a member of the legislative assembly, where he held a sort of neutral position between the Orleanists and Legitimists, and opposed to the Bonapartists. At the *coup d'état*, 1851, Dec., after being imprisoned in Ham, he went into exile till the Franco-Prussian war, when he offered his services to Napoleon III. He was in Metz with Bazaine; and, on its capitulation, retired to Brussels. He returned to France 1871, entered the assembly, and assisted M. Thiers in reorganizing the army.

CHANG-CHOW-FOO, *chăng-chŏw-fô'*, or CHAOU-CHOW, *châ'ō-chŏw:* city of China, cap. of a dept. of the same name, in the province of Keang-su; 31° 50′ n. lat., and 3° 24′ long. e. of Pekin.

CHANG-CHOW-FOO: city of China, cap. of a dept. of the same name, in the province of Fuh-keen; 24° 31′ n. lat., and 1° 24′ lon. e. of Pekin.

CHANGE, n. *chān* [F. *changer;* OF. *changier*—from mid. L. and It. *cambiārĕ*, to exchange—from L. *cambīrĕ*, to exchange; Icel. *kaupa*, to deal]: an alteration or variation in anything; a passing from one state or form to another; vicissitude; variety; small money. CHANGE, contracted from *exchange*, a place where persons meet to transact business: V. to alter; to make different; to shift; to put one thing in the place of another; to leave one thing or state for another; to give one kind of money for another; to undergo variation. CHAN'GING, imp. CHANGED, pp. *chānjd*. CHANGER, n. *chān'jĕr*, one who.

CHANGE'ABLE, a. *-ă-bl*, fickle; prone to change. CHANGEABIL'ITY, n. *-bĭl'ĭ-tĭ*. CHANGE'ABLENESS, n. inconstancy; fickleness. CHANGE'ABLY, ad. *-blĭ*. CHANGE'FUL, a. *-fûl*, subject to frequent change; inconstant. CHANGE'LESS, a. constant; not allowing of alteration. CHANGE'LING, n. a child or thing put in place of another; a fool; a waverer; any one apt to change. CHANGES, n. plu. *chānj'ĭz*, the variation of any number of things, as in a peal of bells. CHANGE-WHEEL, n. one of a kind of wheels, having various numbers of cogs at the same pitch; used to connect the main arbor of a lathe with the feed-screw, so as to vary the relative rates of rotation and consequently the pitch of the screw to be cut.—SYN. of 'change, v.': to alter; vary; veer; turn; shift; diversify; innovate; exchange; barter; substitute:—of 'change, n.': variation; vicissitude; variety; alteration; transition; mutation; novelty; innovation; reverse; revolution; transmutation;—of 'changeable': mutable; variable; inconstant; fickle; versatile; unstable; unsteady; wavering; unsettled; giddy; erratic; volatile.

CHANGE'LING: child or thing put in place of another. It was at one time a common superstition that infants were taken from their cradles by fairies, who left instead their own weakly and starving elves. The children so left were called *changelings*, and were known by their peevishness, and their backwardness in walking and speaking. As it was supposed that the fairies had no power to change children that had been christened, infants were carefully watched until such time as that ceremony had been performed. This superstition is alluded to by Shakespeare, Spenser, and other poets; and it has not yet quite died out of some rural districts in Britain.

CHANG-SHA-FOO, *châng-shâ-fô':* city of China, cap. of the province of Hoo-nan; 28° 20′ n. lat.

CHANK-SHELL, *chăngk'shĕl:* popular name of the shell of several species of *Turbinella*, a genus of gasteropodous mollusks of the group *Siphonostomata* (q.v.), natives of the East Indian seas. These shells are obtained chiefly on the coasts of the s. of India and Ceylon, and form a considerable article of trade to Calcutta. They are much used as ornaments by Hindu women, the arms and legs being encircled with them; and many of them are buried with the bodies of opulent persons. Those which are thrown up on the beach, after the death of the mollusk, and have become whitened, are little valued, but fresh shells readily find purchasers. A chank-shell opening to the right is rare, and is highly prized in Calcutta, so that a price of $250, or even $500, is sometimes paid for one.

CHANNEL, n. *chăn'nĕl* [OF. *chanel*—from L. *canālis*, a pipe for water—from *canna*, a reed; It. *canale;* F. *canal*]: a water-course; the hollow or bed of running water; the deepest part of a river, harbor, or strait; that through which anything passes; means of conveyance; a passage

of water wider than a strait; a gutter; a furrow: **V. to** groove; to cut or form into a channel. CHAN'NELLING, imp. CHAN'NELLED, pp. *-nĕld.*

CHANNEL, ENGLISH—*Mare Britannicum* of the ancients: arm of the Atlantic Ocean dividing England from France, gradually narrowing to the Strait of Dover. It is often called the Channel; and the fleet stationed in it the Channel fleet. A company was formed to make a tunnel from England to France beneath the Channel, and began operations. In 1882, the English government compelled the suspension of the works, most of the military authorities having reported against it as endangering the security of the United Kingdom.

CHANNELING-MACHINE, a machine for cutting the channels in boot-soles, to allow the thread to bury itself in the leather and be protected from immediate wear. It consists of a knife, which makes an oblique cut in the sole to a gauged depth and regulated as to distance from the sole-edge by a guide.

In stone-working the term is applied to a machine having a series of jumpers or chisels which make a groove across the face of a block in the quarry, or detached. It has a gang of cutters operated by direct-acting steam cylinder. The cutters have direct motion from the piston. The valve is reversed at the blow of the cutters; or, in case of no blow being given, it is reversed before the cylinder bottom is touched by the piston. The cutter-bar is adjustable on the cylinder-bar to suit the depth of groove cut. The whole mechanism is mounted on vertically adjustable rollers, and the feed device is operated from the cross-head.

CHANNEL ISLANDS: group of islands belonging to Great Britain, off the n.w. coast of France, between Normandy and Brittany. They are about 120 m. s.w. of Southampton, and the shortest distance from the French coast is about 10 m. The Channel Islands are the only parts of the dukedom of Normandy now belonging to the English crown, to which they have been attached since the conquest. King John, about 1200, lost all Normandy, except these isles. The chief islands of the group are Jersey, Guernsey, Alderney, and Sark. Total area, 75 sq. m. Pop. 96,000: see JERSEY.

CHANNELS, or CHAIN-WALES, of a ship, pieces of wood or iron projecting edgewise like a ledge from the ship's outside, abreast of and extending somewhat behind the masts. They serve to extend the shrouds and to prevent them from touching the gunwale, or being injured by rubbing against it.

CHANNING, *chăn'ing*, BLANCHE MARY, American author: b. Liverpool, England, about 1863; d. Brookline, Mass., 1902, Aug. 9. Her father was Rev. William Henry Channing (q.v.), an American clergyman, for many years in charge of a Unitarian church in Liverpool, and she was a grandniece of the famous Dr. William Ellery Channing

(q.v.). In 1890 she came to the United States and devoted herself to literary work and poster and book-cover designing. She was the author of *Zodiac Stories* (1899); *Winifred West* (1901); *The Balaster Boys* (1902).

CHANNING, Edward, American historian: b. Dorchester, Mass., 1856, June 15. He graduated at Harvard in 1878, and in 1883 was appointed instructor in history there, becoming successively assistant and full professor of history. He has written: *The Narragansett Planters* and *Town and County Government of the English Colonies in North America* (Johns Hopkins Studies, 1883–4); *Columbus and His Companions* in Winsor's *Narrative and Critical History of the United States* (1888); *The United States*, 1765–1865; in collaboration with A. B. Hart, *Guide to the Study of American History* (1896); and with T. W. Higginson, *English History for Americans*; *History of the United States* (1904); *The Planting of a Nation in the New World* (1905); *The Jeffersonian System* (1906). In 1882 he translated B. Delbruck's *Introduction to the Study of Language.*

CHANNING, Edward Tyrrel, ll.d.: 1790, Dec. 12—1856, Feb. 8; b. Newport, R. I., bro. of William Ellery Channing. With his brother Walter he studied at Harvard, was involved in a college 'rebellion' 1807, and did not graduate in course. He turned from law to literature, edited vols. VII, VIII., and IX. of the *North American Review*, 1818–19, and was Boylston prof. of rhetoric and oratory at Harvard 1819–51. His lectures appeared 1856 with a memoir by Richard H. Dana. His high reputation for taste, talent, and mastery of style is illustrated only by this volume, by a life of his grandfather, Wm. Ellery Channing, in Sparks's *Amer. Biog.*, and by sundry contributions to the *Review*. He died at Cambridge, Massachusetts.

CHANNING, Francis Allston, English writer: b. United States, 1841, March 21. He is a son of William Henry Channing (q.v.) and a brother of Blanche Mary Channing (q.v.), and was educated at Exeter College, Oxford. He has been prominent in advocating agricultural and educational reforms and has published *Instinct; The Greek Orators as Historical Authorities; The Second Ballot; The Truth About Agricultural Depression.*

CHANNING, Walter, m.d.: 1786, Apr. 15—1876, July 27: b. Newport, R. I.: brother of William Ellery Channing. He studied medicine in Boston, Philadelphia, Edinburgh, and London, and began practice at Boston 1812. He was lecturer on obstetrics at Harvard 1812–15, prof. of obstetrics and medical jurisprudence 1815–54, and a physician of the Mass. General Hospital 1821–40. His most important work was a *Treatise on Etherization in Childbirth* (1848). Besides this he published an *Address on the Prevention of Pauperism* (1843); *Professional Reminiscences of Foreign Travel; New and Old; Poems* (1851); *A Physician's Vacation* (1856); and *Reformation of Medical Science* (1857). He died in Boston.

CHANNING, William Ellery, d.d.: 1780, Apr. 7—1842, Oct. 2; b. Newport R. I.: Unitarian preacher and author. He entered Harvard Univ. at the age of 14 and took his degree 1798. In 1803, he was ordained minister of a church in Boston. During his earlier ministry, his theological peculiarities had little prominence in his discourses, and in consequence he remained affiliated with his brethren in the Congregational churches then known as 'Orthodox.' In 1819, however, he preached a sermon at the ordination of the Rev. Jared Sparks, in which he advocated the Unitarian doctrine, with so much zeal and ability, that he was termed the 'Apostle of Unitarianism.' This involved him in controversy, to which he was naturally averse. Nevertheless, to the end of his life he preserved a devoutly Christian heart, shrinking with the delicate instinct of a pious nature from everything cold, one-sided, and dogmatic, whether Unitarian or Trinitarian. He never reunited himself with the 'orthodox' Congregational churches; yet, as late as 1841, he wrote: 'I am little of a Unitarian, have little sympathy with the system of Priestley and Belsham, and stand aloof from all but those who strive and pray for clearer light.' The explanation of this is, that while his views had not essentially changed since 1819 the Unitarian churches had come to a position new and not foreseen at first. In 1821, he received the degree d.d. from Harvard Univ., on account of his tractate on the Evidences of Christianity, his Address on War, and his Sermons. In 1822, he visited Europe, and made the acquaintance of several great English authors, such as Wordsworth and Coleridge, both of whom were strongly impressed in his favor. Coleridge said of him: 'He has the love of wisdom and the wisdom of love.' In 1823, he published an *Essay on Natural Literature;* in 1826, *Remarks on the Character and Writings of John Milton;* in 1829, the *Character and Writings of Fénélon;* in 1835, a work in opposition to *Negro Slavery;* in 1838, an essay on *Self-culture.* Besides these, he wrote a variety of essays and treatises, all characterized by vigor, eloquence, pure taste, and a lofty moral earnestness. He died at Bennington, Vermont. His nephew, William Ellery Channing, b. 1818, has been a journalist and poet. An interesting memoir of Dr. Channing has been published by his nephew, William Henry Channing (3 vols., London, 1848).

CHANNING, William Ellery, American poet; nephew of William Ellery Channing, the elder: b. Boston, Mass., 1818, June 10; d. Concord, Mass., 1901, Dec. 23. After some years spent in newspaper work he retired to Concord, where he lived the life of a recluse. His writings include: *Poems* (1843–7); *The Woodman* (1849); *Near Home* (1858); *The Wanderer* (1872); *Conversations in Rome* (1847); and *Thoreau, the Poet-Naturalist* (1873); *Eliot*; *John Brown.*

CHANNING, William Henry: 1810, May 25—1884,

Dec. 23; b. Boston; son of Francis Dana Channing, and nephew of William Ellery Channing. He graduated at Harvard 1829, and at the Cambridge Divinity School 1833. Was Unitarian pastor at Cincinnati and elsewhere, and became leader in the Christian socialism movement. He was an eloquent platform orator, a frequent writer for the press, and a theologian of much more advanced and mystical type than his uncle. He succeeded James Martineau at Hope St. Chapel, Liverpool, 1857, took a charge at Washington 1862, gave up his church for a military hospital, and became chaplain of the house. Besides writing for the *North Amer. Review*, the *Dial*, the *Christian Examiner*, etc., he translated Jouffroy's *Introduction to Ethics* (1840), published a memoir of his famous uncle in 3 vols. (1848), one of his cousin, James H. Perkins, and with Emerson and James Freeman Clark, that of Margaret Fuller Ossoli (1852). His later years were spent in England, where his son is a member of parliament, and his daughter was wife of the poet Edwin Arnold. He died in London. His life, by O. B. Frothingham, appeared 1886.

CHANSON, *shăn'sŏn* [F. *chanson*, a song—from L. *cantĭōnem*, a song]: in *OE.*, a song.

CHANT, n. *chănt* [F. *chanter*—from L. *cantārĕ*, to sing: comp. Gael. *can*, to sing; *cainnt*, speech]: a song; a melody; words recited to musical tones in church service: V. to sing; to intone the words of a hymn or psalm, as in church service; to make melody with the voice. CHANT'ING, imp. CHANT'ED, pp. CHANT'ER, n. masc. a male who; that part of a bagpipe on which the different notes are formed. CHANT'RESS, n. fem. a female who. CHANT'ICLEER', n. *-ĭ-klēr'* [*chant*, and *clear*—*lit.*, clear-singing: L. *canticulārĭŭs*, a singer or chanter]: a cock, from the loudness and clearness of his tones. CHANTRY, n. *chănt-rĭ*, a chapel endowed for the saying or singing of masses for the souls of donors or founders. HORSE CHANTER, or CHAUNTER, in *slang*, one who purchases worthless and worn-out horses, and sells them as sound and good.

CHANT: a species of song, between air and recitative, suited to the Psalms and other parts of church service not metrically arranged, commended by its dignity and simplicity. It was used by the primitive Christians, as exhorted by the apostle Paul and reported by Pliny the younger, and increased in vogue as the new religion made headway. Pope Sylvester founded a school of chanting abt. 330; St. Ambrose adapted a new variety of chant from the old Greek music, and Pope Gregory the Great brought in another arrangement which with some modifications is still in use. Of three kinds of chant which exist in theory, monody, antiphony, and choral, only the last two are familiar. Intoning, practiced by some Episcopal clergy in reading the service, and cantillation, known in Jewish synagogues, are a sort of half chanting: see AMBROSIAN CHANT: GREGORIAN CHANT.

CHANTAL, *shŏng-tâl′*, Jeanne Françoise Frimiot, Baroness de: 1572–1641; b. Dijon, France: dau. of a pres. of the Dijon parliament. She married Christophe de Rabutin-Chantal, and on his death 1600, took a vow not to marry again, but gave herself to her children and to charitable labors. Having chosen St. Francis de Sales for her director 1604, she founded the Convent of the Visitation at Annecy 1610. Her later days were devoted to this order, which at her death had 87 houses, and 60 years later 150 houses with 6,600 inmates. Chantal died at Moulins, was beatified 1751, and canonized 1767 by Clement XII. Her life and letters were published at Paris 1779. Her son was the father of Mme. de Sévigné.

CHANTILLY, *shân-tĭl′lē* or *shŏng-tē-yē′:* town of France, dept. of Oise, about 23 m. n.n.e. of Paris. It is one of the most beautiful places in the vicinity of the metropolis, and attracts immense numbers of visitors. Apart from its natural beauty, it is interesting as the place where the great Condé spent the latter years of his life in the society of such men as Boileau, Racine, and Bossuet. The magnificent château in which he resided was pulled down at the revolution of 1793; but a lesser château, one of the finest specimens of the Renaissance in France, remains. The park and grounds are very charming. Chantilly is noted for its extensive manufacture of the *blonde* lace. Pop. 4,000.

CHANTILLY, *shăn-tĭl′le*, Battle of: 1862, Sep. 1, in Fairfax Co., Va., about 20 m. w. of Washington. Gen. Pope's right wing was attacked by the Confederates under Jackson. A severe thunderstorm failed to interrupt the fight, which lasted till dark, though the results were not of great moment. It occasioned to the Union army a great personal loss: Gens. Philip Kearney and I. I. Stevens were killed here.

CHANTREY, *chăn′trĭ*, Sir Francis: 1781 (not 1782 as has been generally said)—1841, Nov. 25; b. Jordanthorpe, Derbyshire: Eng. sculptor. His father, who was a carpenter, and rented a small farm, died when Chantrey was only 12 years of age, leaving his mother with very little for support. It is said that she gave him 'as liberal an education as her limited means would admit;' but much cannot be meant by the phrase, if it be true, as asserted by Holland in his *Memorials*, that his attendance at the little lane-side school was very irregular, and that 'for a while he certainly drove an ass daily, with milk-barrels, between Norton and Sheffield.' Chantrey's mother married a second time, and the boy was, in 1797, apprenticed for seven years to a carver and gilder in Sheffield called Ramsay. It was in this humble department that Chantrey acquired the rudiments of his future art. It was during this period that his first attempts at modelling in clay were made, and that by the help of casts taken from the faces of his fellow apprentices and his own, he began

the work of portraiture in which his great eminence ultimately consisted. Chantrey's apprenticeship was cancelled two years before its expiry; but his subsequent career is not accurately known. It is certain that he visited both London and Dublin in 1802, probably in the capacity of a journeyman carver and gilder; and in that year he seems to have received instruction as a pupil of the Royal Acad. It was probably then that he commenced serious preparation for the work of his life. In the earlier part of his career as an artist Chantrey is said to have been under great obligations to Nollekens, who had the shrewdness to see, and the generosity to see without envy, his great promise in the branch in which he himself was eminent. In 1816, Chantrey was elected an associate, and in 1818, a member of the Royal Acad.; and in 1819 he visited Italy for the first time. Like the lives of many other eminent men, that of Chantrey presents few claims on our interest after his early struggles were ended. As an ideal artist he never attained high rank, and, in comparison with Flaxman, he had little reputation in his country and none abroad. But he executed with much truth to nature, as it presented itself to his eye, an endless variety and almost countless number of works of individual portraiture, so that there is scarcely any town of importance in Great Britain which cannot show specimens of his skill. As a result of his diligence in this department of art Chantrey accumulated considerable property, the greater part of which, after providing for his widow, he bequeathed for artistic purposes. In this respect, he formed a remarkable contrast to Flaxman, whose modest savings were sworn under £4,000, while Nollekens, whose name is almost forgotten, realized the enormous sum of £150,000—it is even said £200,000. Chantrey died childless, and was buried in a tomb prepared by himself at Norton. Lady Chantrey died 1875, Jan., and the interest of her husband's gift to the Royal Acad., amounting to about £3,000 a year, is now at the disposal of the council, for the 'promotion of British art.'

CHANTRY, *chânt'rĭ:* term applied alike to endowments or benefices, to provide for the chanting of masses, and to the chapels in which the chanting takes place. These endowments were commonly made in the form of testamentary bequests, the object being to insure the erection of a chapel near or over the spot where the testator was buried, and to remunerate the priests for saying masses in it for the benefit of his soul, or of the souls of the others named in his will. Many such chantry chapels are still seen in English parish churches; but they were more common in abbeys and monastic establishments, in which it was considered a privilege to be buried, and where some such offering to the brotherhood was in a measure the price of sepulture. These chapels which have generally the tomb of the founder in the middle are separated from the aisles or nave of the church by open screen-work, a circumstance which has sometimes led to their being

called chancels (q.v.). Sometimes, again, they are separate erections, projecting from the church externally; but in cathedrals and the larger churches they are generally constructed within the church, often between the piers. Many chantries are lavishly enriched with sculpture and tracery of all descriptions, and some of them are adorned with gilding and painting. The term chantry is sometimes applied to small memorial chapels of recent construction attached to Prot. churches.

CHANZY, *shŏng-zē′*, Antoine Eugene Alfred: 1823, Mar. 18—1883, Jan. 4; b. Nouart, Ardennes: French general. At the age of 15 he became cabin-boy on a man of war, but afterwards studied at the Acad. of St. Cyr. After some service under Canrobert, he was made lieut.-col. at Solferino 1859, and brig.-gen. in Algeria 1868. In the war with Prussia he commanded a division of the army of the Loire. He attacked before Orleans with some success 1870, Dec. 1, but on the two following days was driven back. As commander of the second army of the Loire, he attempted to cover Tours, but met a complete defeat before Le Mans 1871, Jan. 12, and declared further resistance useless. He vindicates his course in *La deuxième armée de la Loire*, 1871. Chanzy became a member of the national assembly, and leader of the left centre at Bordeaux and Versailles, commander of the 7th army corps at Tours 1872, gov.-gen of Algeria 1873, senator 1875, ambassador to St. Petersburg 1879–81, and 1882 commander of the 6th army corps at Châlons, where he died.

CHAOS, n. *kā′ŏs* [L. and Gr. *chāŏs*, a yawning gulf, immense void; comp. Gael. *céo*, a dense fog]: the confused, mass in which this earth is supposed to have existed prior to its being made a fit habitation for man; any mixed and confused mass; confusion; disorder; a state of bewilderment and confusion of mind. Chaot′ic, a. *-ŏt′ĭk*, confused; thrown together into a vast heap without any order or arrangement. In the ancient cosmogonies, chaos signified that vacant infinite space out of which sprang all things that exist. Some poets make it the single original source of all; others mention with it Gæa, Tartaros, and Eros. By some also only the rough outlines of heaven and earth were supposed to have proceeded from chaos, while the organization and perfecting of all things was the work of Eros. Still later cosmogonists, such as Ovid, represent it as that confused, shapeless mass out of which the universe was formed into a *kosmos*, or harmonious order.

CHAOS, *shâ′os*, or Bird Islands: several rocky islets at the entrance of Algoa Bay, s. Africa, about 35 m. e. of Port Elizabeth. On one of these islands Bartholomew Diaz, navigator, died 1500.

CHAP, n. *chăp* [Scot. *chap*, to strike: Dut. *kappen*, to cut, to prune; W. *cobio*, to strike]: a gap or chink; a crack in the hands or feet; a stroke; a blow: V. to split; to crack, as the hands or feet; to open in long slits. Chap′ping, imp. Chapped, pp. *chăpt*. Chap′py, a. *-pĭ*, full of chaps: see Chapped Hands and Chilblains.

CHAP, n. *chŏp* [OE. *chuff*, fat, full-bodied: AS. *ceaplas*, the chaps, the jaws; Icel. *kjaptr;* Sw. *kaft*, the jaw]: the jaw, applied to animals.

CHAP, v. *chăp* [AS. *ceapian;* Dut. *koopen*, to buy; Icel. *kaupa*, to sell (see CHEAP and COPE)]: in *OE.* and *Scot.*, to make a bargain by striking hands; to buy and sell; to trade: N. trade; a familiar term for a man or boy. CHAPMAN, n. [AS. *ceapman*—from *ceáp*, cattle, trade; *man*, a man; Ger. *kaufman;* Icel. *kaupmather*, a merchant]: a merchant who attends fairs; a peddler; a hawker. CHAP-BOOK, n. a small book printed for chapmen or hawkers to sell.

CHAPAIS, THOMAS: Canadian statesman: b. St. Denis, Que., 1858. He was educated at St. Anne's College and Laval University; called to the bar 1879, practiced for a number of years in Quebec and also took up journalism as editor of *Le Courrier du Canada*; appointed to Quebec Legislative Council 1892, Speaker 1895. He served in the Taillon and Flynn governments. His chief works are *Les Congregations enesignantes et le Brevet de Capacite* (1893); *Melanges de Polemique* (1905); *Jean Talon; Intendant de la Nouvelle France* (1905).

CHAPALA, *châ-pâ'lâ:* largest lake in Mexico; about 1,300 sq. m. It is merely an expansion of the Rio Grande de Lerma, which enters the Pacific at San Blax. Chapala lies on the table-land of Anahuac, and has many islands.

CHAPARRAL, or CHAPARAL, n. *chăp-ar-răl'* [Sp.—from *chaparra, chaparro*, an evergreen oak, of Iberian origin]: a thicket of low evergreen oaks; thick bramble-bushes entangled with thorny shrubs in clumps.

CHAP BOOKS, *chăp' buks:* a variety of old and now scarce tracts of a homely kind, which at one time formed the only popular literature. In the trade of the book-seller, they are distinguishable from the ordinary products of the press by their inferior paper and typography, and are reputed to have been sold by chapmen (see CHAPMAN) or peddlers; hence their designation. The older C. B. issued in the early part of the 17th c. are printed in black letter, and are in the form of small volumes. Those of a later date are in the type now in use, but equally plain in appearance. Of either variety they were printed mostly in London, many being without dates. They were of a miscellaneous kind, including theological tracts, lives of heroes, martyrs, and wonderful personages, interpretations of dreams, fortune-telling, prognostications of the weather, stories of giants, ghosts, hobgoblins, and witches, histories in verse, and songs and ballads. See *Notices of Fugitive Tracts and Chap Books*, also *Descriptive Notices on Popular English Histories;* both by J. O. Halliwell, printed for the Percy Soc. An inferior class of tracts succeeded these books for the common people, and are best known as *Penny Chap Books.* For the most part they consisted of a single sheet, duodecimo, or 24 pages. Besides the title the first page usually contained a coarse wood-cut embellishment.

The paper was of the coarsest kind adapted for printing, and the price, as the name imports, was a penny each. The subjects, besides being of a similar nature to the above, included stories of roguery and broad humor. These penny chap books were issued by an obscure class of publishers in London and several English provincial towns, especially Newcastle-on-Tyne. They were issued also from the presses of Edinburgh, Glasgow, Falkirk, and Paisley. It is a curious fact that nearly all the penny chap books of this very homely kind which were latterly popular, were written by Dougald Graham, who, previous to his death 1779, filled the office of bellman or town-crier of Glasgow. The most reputable production of this humble genius was a *History of the Rebellion* in a hudibrastic metre, which was a great favorite with Sir Walter Scott, and is now scarce; see *Chambers's Journal*, First Series, vol. x., p. 84; also the *Paisley Magazine* (1829), an extinct publication of great rarity, in which is given a biographic sketch of Dougald Graham, with a list of his productions. In some parts of Scotland and the n. of England Graham's penny chap books are still seen on stalls at markets; but the general advances in taste, and the diffusion of an improved literature, have displaced them in almost all other quarters. Collections of the older chap books are now found only in the libraries of bibliomaniacs, by whom they have been picked up at extravagant prices from dealers in second-hand books. In various continental countries, there are numerous varieties of chap books at exceedingly small prices. The French government, being desirous to substitute a wholesome class of tracts of this kind for what are generally objectionable on the score of taste and morality, have latterly, through commissioners, taken some steps on the subject. See Ashton's *Chap-Books of the 18th Century* (1882); Nisard's *Histoire des Livres Populaires.*

CHAPE, n. *chāp* [F. *chape;* It. *chiappa;* Sp. *chapa*, a small plate of metal]: a metal plate at the end of a scabbard; a catch by which a thing is held in its place.

CHAPEAU, n. *shăp-pō′* [F.]: a hat; a cap or headdress.

CHAPEL, n. *chăp′ĕl* [F. *chapelle*—from mid. L. *capella*, a hood, the canopy or covering of an altar where mass was celebrated—afterward extended to the recess in a church in which was an altar dedicated to a saint]: a subordinate place of public worship; a church; a dissenters' meeting-house; *among printers*, the body of workmen in a printing office—said to be so named from the first printing-office having been established by Caxton in a chapel of Westminster Abbey. CHAPEL MEETING, a meeting held in the printing-office for consideration of trade and other questions affecting the interests of the workmen in that office. CHAP′ELRY, n. *-rĭ*, the bounds assigned to a chapel. CHAPEL-OF-EASE, a chapel erected in a large parish to afford additional accommodation for worship to parishioners.

CHAPEL-ROYAL, a body of clergy and lay clerks ministering at the court of a Christian monarch; the place of worship in which these officiate.

CHAPEL, *chăp'ĕl:* a building erected for the purposes of public worship, but not possessing the full privileges and characteristics of a church. In this sense, all places of worship erected in England by dissenters are now called chapels, and the term is applied also to supplementary places of worship, even though in connection with the established church—such as parochial chapels, chapels of ease, free chapels, and the like. In former times, it was applied either to a domestic oratory, or to a place of worship erected by a private individual, or a body corporate. In the latter sense, we speak of chapels in universities and colleges. But its earliest signification was that of a separate erection, either within or attached to a large church or cathedral, separately dedicated, and devoted to special services. See CHANTRY. Chapels had no burying-ground attached to them, and the rite of baptism was not usually administered in them.

CHAPELLE, PLACIDE LOUIS, American Roman Catholic prelate; b. in the diocese of Mende, France, 1842, Aug. 28; d. New Orleans, La., 1905, Aug. 9. He studied at the College of Enghien, Belgium, but in 1858 came to the United States and after completing his theological course at the Baltimore Seminary, was ordained priest by Archbishop Spalding in 1865, June, the missions of Montgommery co., Maryland, being the scene of his first ministerial duties. In 1871 he was made assistant at St. John's Church and afterwards rector of St. Joseph's Church, Baltimore, whence he was appointed to the rectorship of St. Matthew's Church, Washington. He became vice-president of the Bureau of Catholic Indian Missions and helped to found the Catholic University. In 1891, Aug. 21 he was made coadjutor to the Bishop of Santa Fé; in 1893 was elevated to the titular archiepiscopal see of Sebaste, and in less than a year succeeded Archbishop Salpointe in the see of Santa Fé. However, he was soon transferred to the diocese of New Orleans, assuming his new charge in 1898, Feb. 10. In 1898, September, Pope Leo XIII. appointed him apostolic delegate to Cuba and Porto Rico, in 1899 the Philippines being added to his care. Subsequently he spent three months in the discharge of his official duties in his country's new possessions. Within eight months he consecrated four bishops for Cuba, and three more for sees in other places.

CHAPELLE, LA, *lâ shâ-pĕl':* name of several places in France, the most important of which forms a northern suburb of Paris, where chemicals, salt, starch, liqueurs, etc., are manufactured.

CHAPELLE DE FER: see HELMET.

CHAPERON, n. *shăp'er-ŏng* [F. *chaperon*, a hood—from mid. L. *cappa*, a hooded cloak; It. *capperone*, a cloak worn

by peasants]: *anciently,* a hood or cap worn by knights of the garter, at one time in general use, afterward appropriated to doctors and licentiates in colleges; an elderly woman friend attendant on a young lady in public (perhaps from the hood being then worn); any attendant and guide; a device placed on a horse's head at pompous funerals: V. to attend as a guide or protector. CHAP'ERONING, imp. *-ŏnĭng.* CHAP'ERONED, pp. *-ŏnd.* CHAP'ERONAGE, n. *-ŏn-āj,* patronage or protection afforded by a chaperon.

CHAPFALLEN, a. *chŏp'fawln* [*chap,* the jaw, and *fallen*]: having the lower jaw depressed; dejected; dispirited; silenced.

CHAPIN, *chā'pĭn,* CHESTER W.: 1798, Dec. 16—1883; b. Ludlow, Mass. The son of a poor farmer, he rose by his own exertions, joined Horatio Sargent in managing stage-lines in the Connecticut valley, then acquired control of the steamboat traffic between Hartford and Springfield, and finally interested himself in railroads, becoming connected with several, and being for many years pres. of the Boston and Albany railroad. His residence was at Springfield, Mass.

CHAPIN, EDWIN HUBBELL, D.D., LL.D.: 1814, Dec. 29—1880, Dec. 27; b. Union Village, Washington co., N. Y. He was taken in childhood to Bennington, Vt., and studied in a seminary there. After reading law at Troy and editing the *Magazine and Advocate,* he entered the Universalist ministry, 1837, and took a charge at Richmond, Va. He was pastor at Charlestown, Mass., 1840–46, at School Street, Boston, as colleague of Hosea Ballou, 1846–48, and from that date in New York. Beginning near the City Hall park, his flock grew apace, and after several removals became the Church of the Divine Paternity at 5th avenue and 45th street. A brilliant preacher and lecturer, Dr. Chapin was long the greatest religious attraction of the pulpit in and about the metropolis, after Henry Ward Beecher; as with Mr. Beecher, his eloquence was the outcome of a vivid imagination and warm and genial sympathies. He was a delegate to the Peace Congress at Frankfort, 1850, an earnest opponent of slavery, a vigorous supporter of the Union, and an advocate of every solid phase of progress and reform. He edited the *Christian Leader* from 1872. His many publications, gathered chiefly from his sermons and lectures, include *Hours of Communion* (New York, 1844): *Discourses on the Lord's Prayer* (1850); *Characters in the Gospels* (1852); *Moral Aspects of City Life* (1853); *Discourses on the Beatitudes* (1853); *Humanity in the City* (1854); *True Manliness* (1854); *Duties of Young Men* (1855); *The Crown of Thorns* (1860); *Living Words* (1861); *The Gathering,* memorial of a family assemblage, Springfield, Mass. (1862); *Providence and Life;* and *Discourses on the Book of Proverbs.* He wrote a few lyrics, some of which appeared in *Hymns for Christian Devotion* (Boston, 1846), compiled by himself and J. G. Adams, and for many years the most widely used

of Universalist collections. His degree of S.T.D. was conferred by Harvard, 1856, and that of LL.D. by Tufts College, 1878. He died in New York, after long illness and vain efforts to regain his health by foreign travel. Dr. Chapin's Christian devotedness and evangelical spirit gained almost universal recognition.

CHAPITER, n. *chăp'ĭ-tėr* [OF. *chapitel;* It. *capitello*—from L. *capĭtellum*, a dim. of *caput*, the head]: the upper part or capital of a pillar.

CHAPLAIN, n. *chăp'lĭn* [F. *chapelain;* It. *cappellano*, chaplain—from mid. L. *capella*, a hood (see CHAPEL)]: originally the title of the ecclesiastic who accompanied an army, and carried the relics of the patron saint: see CHAPEL. It has now come to signify a clergyman not having charge of a parish, but employed to officiate at court, in the household of a nobleman, or in an army garrison, ship, etc. Such officials began early to be appointed in the palace of the Byzantine emperors. The practice afterward extended to the western empire, and to the courts of petty princes and even of knights, and continued after the reformation. Six clergymen of the Church of Scotland have a similar title in Scotland; but their only duty is to conduct prayer at the elections of Scottish representative peers. A statute of Henry VIII. limits the right of nominating private chaplains in England: thus, an archbishop may have eight, a duke six, a baron three; and chaplains so appointed have certain privileges, and may hold two benefices with cure of souls. CHAP'LAINCY, *-sĭ*, and CHAP'LAINSHIP, n. the office, station, or business of a chaplain.

ARMY CHAPLAIN in Great Britain.—There have been such chaplains for many generations, and the office was at one time regarded as a salable perquisite; but the system was reorganized and improved in 1796. In recent years, Rom. Cath. and dissenting Prot. chaplains also have been appointed, which indicates the progress of toleration. The chaplains belong, not to *regiments*, but to the staff of the army, so as to be generally available. At home, they are attached to the military stations; but in the field they are located at headquarters, at the hospitals, and with the divisions. The officers at the stations usually arrange for the men to attend divine service at the nearest parish church; but this still leaves the chaplains many duties to fulfil. Where, as sometimes happens, there is no regular church or chapel near at hand, the chaplain reads and preaches to as many men as can conveniently group themselves around him at one time, and thus serves many different congregations at different times of the Sunday. He visits the sick at the hospitals, and examines and encourages the regimental schools. Among the wooden huts at Aldershot camp, a church has been built, which is rendered available for chaplains of different religious denominations in succession.—The *Chaplain-general*, who receives £1,000 per annum, has duties partaking somewhat of those of an archdeacon. He assists the war office in selecting

chaplains, and in regulating the religious matters of the army, so far as the Church of England is concerned. His office forms one of the eight departments under the new organization of the war office. There are 86 chaplains on the staff, besides officiating clergymen (not belonging to the army), and chapel-clerks. The commissioned chaplains receive from 10*s.* to 22*s.* 6*d.* per day, besides allowances; and there are always some on half-pay; while the officiating clergymen receive head-money for the troops attending their ministrations. The whole expenditure for chaplains, and other charges connected with divine service, figures in the army estimates at near £57,000 annually.

Navy Chaplain in Great Britain.—Every ship in commission, down to and including fifth-rates, has a chaplain. The navy estimates provide for above 70 commissioned chaplains, at stipends varying from £219 to £401 per annum. The chaplains perform divine service at stated times on shipboard, visit the sick sailors, and assist in maintaining moral discipline among the crew.

Chaplain, in the United States.—Clergymen bearing this official name are attached to the houses of congress, to the legislatures of most states, to each regiment and each army post of sufficient size, to the larger vessels of the navy, and to many prisons, reformatories, almshouses, etc. In the more extensive of these institutions, where the inmates are of different religious affiliations, two (or probably more) chaplains, Rom. Cath. and Prot., are sometimes provided. During the first year of the civil war, each volunteer regt. being allowed a chaplain who was paid, like the other officers, by the general government, laymen occasionally occupied the place; but this irregularity was soon corrected by legislation requiring evidence of clerical standing. Universities and colleges are often, though not always, furnished with a chaplain or pastor; in a majority of such cases, his somewhat vague duties are eked out by those of a professorial chair, not always wholly theological.

CHAPLET, n. *chăp′lĕt* [F. *chapelet*, a wreath, a rosary —from OF. *chapel*, a head-dress—from *chape*, a cope—from mid. L. *capa*, a hooded cloak]: a garland or wreath encircling the head; a string of beads, called a paternoster for rosary, used by Rom. Cath. to keep count of their prayers—so named as resembling the wreaths or crowns of flowers placed on the head of the Virgin; in *French*, the *chaplet de roses* = a chaplet of roses, shortened in *rosaire* or rosary; a little molding carved into beads, etc. A chaplet in *heraldry* is always composed of four roses, the other parts being leaves.

CHAPLIN, Jeremiah, American historical writer: b. Danvers, Mass., 1813; d. New Utrecht, N. Y., 1886, March 5. He was author of: *Life of Charles Sumner; Life of Franklin; Riches of Bunyan; Life of Galen;* and *Life of Henry Dunster, First President of Harvard College* (1872), a work of much historical value.

CHAPMAN, n. *chăp′măn* [AS. *ceap-man*, a merchant

(see CHEAP, and CHAP 3)]: trader, but popularly applied in a more limited sense to a dealer in small articles, who travels as a peddler or attends markets. See CHAP-BOOKS.

CHAPMAN, ALVAN WENTWORTH, American botanist: b. Southampton, Mass., 1809, Sep. 28; d. 1899, April 6. He graduated at Amherst 1830, studied medicine in Georgia and Florida, and in 1846 settled in Appalachicola, where he was collector of internal revenue 1865–6, and collector of customs 1866–9. He attained a high rank as a botanist, and the genus *Chapmannia* was named in his honor. He wrote: *Flora of the Southern United States, Arranged According to the Natural System; the Ferns by D. C. Eaton* (1860, 2 ed. enlarged, 1883).

CHAPMAN, FRANK MICHLER, American naturalist: b. Englewood, N. J., 1864, June 12. Since 1887 he has been assistant curator in the department of vertebrate zoology in the American Museum of Natural History, New York. He is editor of *Bird Lore* and associate editor of *The Auk*. Besides many papers in scientific journals, etc., he has published: *Handbook of Birds of Eastern North America* (1895); *Bird-Life, a Guide to the Study of Our Common Birds* (1897); *Bird Studies with a Camera* (1900); *A Color Key to North American Birds* (1903); *The Economic Value of Birds to the State* (1903); etc.

CHAPMAN, GEORGE, English poet, the earliest and perhaps the best translator of Homer; b. Hitchin Hill, Hertfordshire, 1557; d. London, 1634, May 12. He was educated at Oxford, and in 1570 proceeded to London, where he made the friendship of Shakespeare, Spenser, Marlowe, and other distinguished writers of the time. As to his personal history little is known, but he is supposed to have held some post in connection with the court. The first of his works, so far as known, was the *Shadow of Night*, a poem published in 1594. His translation of the *Iliad*, in rhyming lines of 14 syllables each, was published in three separate portions in 1598, 1600, and 1603. It has been highly commended by such poets as Pope, Keats, and Coleridge, as also by Lamb. Keats' sonnet *On First Looking Into Chapman's Homer* ('Then felt I like some watcher of the skies,' etc.) is well known. In 1614 appeared his translation of the *Odyssey* in the same metre as the *Iliad*, followed in the same year by that of the *Battle of the Frogs and Mice* and the Homeric hymns. He also translated Hesiod's *Works and Days* and portions of various classic poets. He wrote numerous plays, almost all now forgotten, though containing some fine passages. The earliest of these was *The Blind Beggar of Alexandria*, a comedy, 1598. He was associated with Jonson and Marston in writing the comedy of *Eastward Ho!* which from its satirical reflections on the Scotch is said to have nearly brought severe punishment on the authors. Among his tragedies are *Bussy d'Ambois; Cæsar and Pompey; Revenge for Honor*, and two dramas on the life of Marshal Biron, which Swinburne characterizes as 'a storehouse of lofty thought and splendid verse, with scarcely a flash or sparkle of dramatic

action.' An edition of his works was published (1873–4). See Swinburne, *George Chapman: a Critical Essay* (1875); Matthew Arnold, *On Translating Homer.*

CHAPMAN, Henry Cadwalader, American physician: b. Philadelphia 1845, Aug. 17. He graduated at the University of Pennsylvania in 1863, from the medical department in 1867, and after three years' study in Europe settled in practice in Philadelphia. He has lectured on Anatomy and Physiology in the University of Pennsylvania; on Physiology of the Nervous System in Jefferson Medical College, and is curator of the Philadelphia Academy of Sciences. He has published: *Evolution of Life* (1878); *History of the Discovery of the Circulation of the Blood* (1884); *Medical Jurisprudence and Toxicology* (3 ed. 1903).

CHAPMAN, J. Wilbur, American clergyman: b. Richmond, Ind., 1859, June 17. He graduated at Lake Forest University, Illinois, in 1879, and at Lane Theological Seminary in 1882. After pastoral work in Albany and Philadelphia, and evangelistic work in all parts of the country, he became pastor of the Fourth Presbyterian Church in New York, remaining there till 1903, Jan. 1, when he became executive secretary of the general assembly's committee on evangelistic work for the Presbyterian Church. He is a prolific writer of Sunday-school and Christian Endeavor literature, of which the following are among his most recent titles: *The Lost Crown* (1898); *Spiritual Life of the Sunday-school* (1899); *The Surrendered Life* (1899); *From Life to Life* (1900); *Life and Work of D. L. Moody* (1900); *Revivals and Missions* (1900); *Day by Day* (1901); *Man Who Said He Would* (1902); etc.

CHAPMAN, John Gadsby, American artist: b. Alexandria, Va., 1808; d. 1889, Nov. 28. Early indicating his taste for design, he was enabled by the liberality of a friend to visit Rome, and to study and practice his art there for several years. After his return to the United States, he removed to the city of New York, where, by his rare union of mechanical ingenuity with artistic taste, he rapidly obtained ample employment. He executed many original designs for the illustration of works of taste or fancy, and also painted the *Baptism of Pocahontas* for one of the panels in the rotunda at Washington. In 1848 he returned to Rome.

CHAPMAN, John Jay, American lawyer and essayist: b. New York 1862. He was graduated from Harvard in 1884, was admitted to the New York bar and has been in active practice there since. His essays and speeches have attracted considerable attention on account of their striking individuality and original point of view. His published volumes include: *Emerson, and Other Essays* (1898); *Causes and Consequences* (1898)); *Practical Agitation* (1900).

CHAPMAN, Maria Weston, American reformer: b. Weymouth, Mass., 1806; d. there 1885. She was a daughter of Warren Weston, and received her education in her

native place and also in England. She married in 1830; became an active opponent of slavery in 1834; and after the death of her husband in 1842, went to Paris, France, and assisted the antislavery cause with her pen. She returned to America in 1856. She edited the autobiography of her friend, Harriet Martineau (1877), and wrote: *Songs of the Free* (1836); *Right and Wrong in Boston; Report of the Boston Female Anti-Slavery Society* (1836); *Right and Wrong in Massachusetts* (1840).

CHAPPED HANDS, *chăpt* or *chopt*: a disease of the skin of the hands produced by undue exposure to extremes of cold and heat, and affecting chiefly the most exposed knuckles, the skin over which swells and cracks, with itching, pain, and heat; in the most severe cases there is ulceration, difficult to heal in proportion to the length of time the disease has been neglected. Chaps may generally be avoided if the hands are washed always with cold water, and not habitually exposed to great cold, or when cold, to the heat of a fire. For the relief of chaps one should thoroughly rub in, after each washing, oxide of zinc ointment; or with a dilute solution of borax in glycerine and water; or with glycerine alone, slightly diluted with water, the hands being in any case habitually covered with woolen gloves in cold weather.

CHAPPY: see under Chap 1.

CHAPS, or Chops, n. plu.: the jaws: see Chap 2.

CHAPSAL, *shâp-sâl'*, Charles Pierre: 1787–1858; b. Paris: grammarian. With F. J. Noel he prepared a *Nouvelle grammaire française, avec exercices* (1823); this in 25 years was widely adopted and went through over 40 editions. Enriched by his publications, Chapsal bought the Château de Polangis, spent much on charity, and bequeathed 80,000 francs to the teachers in the environs of Paris.

CHAPTAL, *shâp-tâl'*, Jean Antoine, Count of Chanteloup: 1756, June 4—1832, July 30; b. Nogaret, Lozère: French chemist and statesman. He studied at the Montpellier school of medicine, returned there 1781, to take the new chair of chemistry, and taught the doctrines of Lavoisier as against those of Stahl. Enriched by an uncle's death, he set up works to manufacture mineral acids, alum, white lead, soda, etc. The govt., in recognition of his labors, ennobled him. He was arrested for a *Dialogue entre un Montagnard et un Girondin*, but soon released, and for a time (1793) managed the saltpetre works at Grenelle. At the end of the century, Napoleon made him a counselor of state. Succeeding Lucien Bonaparte as minister of the interior, he established a chemical manufactory near Paris, a school of arts, and a society of industries; reorganized the hospitals, introduced the metric system, and in various ways promoted the cause of science. Napoleon made him treasurer to the senate, and, 1814, director-gen. of commerce and manufactures and a minister of state. Though

for a time erased from the list of peers, he was named a member of the Acad. of Sciences by Louis XVIII., 1816. He died in Paris.

CHAPTER, n. *chăp'tėr* [F. *chapitre;* OF. *chapitle*—from L. *capitŭlum,* a small head—from L. *caput,* the head: It. *capitolo,* head or division of a book]: the division of a book distinctly marked off with a heading, and numbered; an assembly of the dean, canons, and prebendaries, or of the dean and canons residentiary alone, attached to a cathedral, usually styled *Dean* and *Chapter.* To THE END OF THE CHAPTER, to the end or finis; to work out and complete thoroughly.

CHAP'TER-HOUSE [see CHAPTER]: building in which the monks and canons of monastic establishments, and the dean and prebendaries of cathedral and collegiate churches, meet for management of the affairs of their order or society: see CATHEDRAL. Chapter-houses frequently exhibit most elaborate architectural adornment; for instance, those at York, Southwell, and Wells. The original stained-glass windows remain at York, and are of exquisite beauty. On the walls of that at Westminster, the original painting has been discovered. Chapter-houses are of various forms: those at York and Westminster are octagonal; those at Oxford, Exeter, Canterbury, Gloucester, etc., are parallelograms; Lichfield is an oblong octagon; Lincoln, a decagon; and Worcester, a circle. They are always contiguous to the church, and are generally placed w. of the transepts. They generally either open into the church, or are entered by a passage. Chapter-houses were often used as places of sepulture, and have sometimes crypts under them, as at Wells and Westminster.

CHAPTREL, n. *chăp'trĕl* [L. *caput,* the head (see CHAPTER)]: a pillar with a little chapiter; the upper part of a pillar that supports an arch.

CHAPU, or CHAPOO, *châ-pô'* or *shâ-pô':* maritime town of China, province of Che-keang, 50 m. n.w. of Chinhai. It is the port of Hangchow, and connected therewith by canal. Chapu has a circuit of about 5 m., exclusive of its suburbs. A wall separates the Tatar quarter from the rest of the town. It was much injured by the British, 1842, but not held by them. It was formerly the only Chinese port trading with Japan. The surrounding region is one of the richest and best cultivated in China.

CHAPULTEPEC, *châ-pôl-tĕ-pĕk'* ('Grasshopper Hill'), BATTLE OF. This, the last considerable engagement of the Mexican war, and which was followed by the immediate occupation of the City of Mexico, was fought 1847, Sep. 12–13. Chapultepec is an isolated rocky mound 150 feet high, two miles southwest of the southwestern or Belen gate of the city, and guarding a main road into it; sharply precipitous on the northern, eastern, and part of the southern sides, but on the west and southwest sloping gradually to level marshy ground partly covered with a cypress grove.

Here Montezuma and his predecessors had their pleasure grounds, and Chapultepec was their country-seat. A fortified castle was started here by the viceroy Galvez in 1785, but left unfinished; from 1822 it was used as a military academy, in 1847 having some 40 students, who fought heroically in the battle. It was guarded by strong batteries, and its approaches were protected by walls (an aqueduct on the north) which shielded other batteries; through the marshy fields in front of these were irrigating ditches, some large and deep, with high banks and sticky bottoms, very serious obstacles to troops and artillery. The one military defect of the castle for modern warfare was the limited force that could effectively use arms within it; the garrison of 800, commanded by Gen. D. Nicholas Bravo, was as large as could well operate there. Along its approaches were some 4,000 to 4,500 more troops, while Scott had 7,500; but Santa Anna dared not strip the other entrances to the city. By the battle of Molinos del Rey on the 8th Scott had carried a set of long store buildings southwest of Chapultepec and, though under its guns, forming some protection for hostile artillery. On the 12th Captain Hugar planted heavy batteries here and at three other places, to range the south and west of the hill, the only accessible portions, on which an assault had been determined; and their fire gradually silenced that from Chapultepec, breached the defenses, and caused much loss. About 8 A.M. on the 13th Scott launched two assaulting columns; Pillow on the west, from Molinos del Rey through the cypress grove, supported by Worth; Quitman against the south, from the heights of Tacubaya, where Scott had his headquarters, supported by Persifer F. Smith's brigade. Preceded by the pioneer companies with ladders, axes, picks, and crowbars, and under a plunging fire, they surmounted all obstacles, cleared the approaches, broke through the walls, climbed the heights, entered the castle gates, and having cut off retreat by the northwestern road to Mexico, captured the entire garrison. The approaches and castle had been mined, but the defenders waited too long before exploding the mines, and failed. The next day the American army overcame all remaining resistance and entered the capital. Their loss in these three days was 863 killed and wounded, including Col. T. B. Ransom killed, Pillow and Shields wounded. The Mexican loss was unknown, but certainly as heavy, and included several gallant and brilliant officers; and 823 prisoners were taken, including three generals, one the commandant of the academy.

CHAR, n. *châr* [Gael. *cear*, *ceara*, blood, blood-colored]: an esteemed fish, inhabiting mountain lakes. See CHARR.

CHAR, v. *châr* [AS. *cerran*, to turn; OE. *caire*, to turn, to char; *caireden*, charred; F. *charrée*, ashes]: to turn wood to coal; to burn to a black cinder; to blacken wood by exposure to fire; to reduce wood to coal or carbon by burning it slowly under cover. CHAR'RING, imp. CHARRED,

pp. *chârd.* ADJ. burned to a black cinder. CHAR'COAL, n. *-kōl,* wood burned into carbon, or made black all through like coal. ANIMAL CHARCOAL, lamp-black derived from oils and fat. WOOD-CHARCOAL, twigs and fagots charred. MINERAL CHARCOAL, or COKE, ordinary pit-coal charred.

CHAR, or CHARE, n. *chär* [AS. *cyre,* a turn; AS. *cerran;* Dut. *keeren,* to turn; Gael. *car,* a turn, a twist]: work done by the day; a single job: V. to work at the house of another by the day; to do jobs. CHA'RING, imp. CHARED, pp. *chärd.* CHAR-WOMAN, a woman that works by the day, an occasional servant.

CHARA, n. *kā'ră* [Gr. *chairo,* I am glad—alluding to their habitat]: in *bot.,* the generic name for the brittleworts, water-weeds intermediate between the algæ and the mosses.

CHARACEÆ, *ka-rā'sē-ē* [see CHARA]: aquatic plants, forming, according to some botanists, a distinct nat. ord. of acotyledonous plants; according to others, a sub-order of *Algæ.* Their stems are tubular, consisting either of a single tube, or of parallel tubes, a central one with smaller ones applied to its surface; they are either pellucid or incrusted with carbonate of lime, which is not to be regarded as a mere accidental incrustation, but belongs to their proper structure; and they have whorls of symmetrical tubular branches. They grow in stagnant waters, both fresh and salt, are always submersed, and often completely conceal muddy bottoms. A number of species are natives of Britain. The organs of reproduction are of two kinds—lateral *globules,* and axillary *nucules.* These organs have caused no little difficulty to botanists; the nature and use of the globules in particular being not understood. The simple cellular structure of the characeæ, apart from all consideration of their reproductive organs, associates them with the lower Algæ, rather than with phanerogamous plants. None of them is of any known use. It was in the characeæ that the beautiful phenomena of *Cyclosis* (q.v.) were first observed. Sir David Brewster discovered that each of the minute calcareous particles incrusting the characeæ possesses double refraction, and has regular neutral and depolarizing axes.

*Fossil Characeæ.*—The calcareous incrustation which covers the organs of reproduction, as well as the stems of some characeæ, has, from its power of resisting decomposition, caused the abundant preservation of this order in the Tertiary fresh-water strata. The nucules originally described under the name of *gyrogonites,* and supposed to be foraminiferous shells, have been noticed by E. Forbes in strata as old as the Middle Purbeck beds. No remains of these have been observed in newer deposits, until they are found in the Tertiaries. The nucules, associated with *Lymnæa* and *Planorbis,* are very abundant in the Eocene Bembridge beds (q.v.).

CHARACIN'IDÆ: see SALMONIDÆ.

CHARACTER, n. *kăr'ăk-tėr* [Gr. *charaktēr;* L. *character,* an engraved mark; F. *caractère*]: a mark cut on any

thing; a mark or figure to represent a sound, as a letter or a note in music; manner of writing, speaking, or acting; peculiar qualities in a person, good or bad; an account or representation of the qualities of a person or thing; moral excellence; the qualities supposed to be impressed on a person by his post or office; a personage in a play representing some qualities of another, real or supposed; strongly marked differences of power, as, he has a good deal of *character;* reputation: V. to inscribe; to engrave. CHAR'ACTORING, imp. CHAR'ACTERED, pp. *-tẽrd.* CHAR'ACTERIZE, v. *-īz,* to describe by peculiar qualities; to mark with a particular stamp; to distinguish. CHAR'ACTERI'ZING, imp. CHAR'ACTERIZED, pp. *-īzd.* CHAR'ACTERIZA'TION, n. *-ī-zā'shŭn,* the act of characterizing. CHAR'ACTERIS'TIC, n. *-ĭs'tĭk,* that which distinguishes a person or thing from another; ADJ. applied to the principal letter of a word, retained in all its derivatives and compounds, or nearly all. CHAR'ACTERIS'TIC, a. and CHAR'ACTERIS'TICAL, a. *-tĭ-kăl,* that marks the distinctive qualities of a person or thing. CHAR'ACTERIS'TICALLY, ad. *-lĭ.* CHAR'ACTERLESS, a. destitute of any distinguishing peculiarity. CHARACTS, n. plu. *kăr'ăkts,* in *OE.,* affected qualities; descriptions.—SYN. of 'character, n.': stamp; aspect; nature; kind; sort; assortment; species; genus; form; cast; order; air; mold; shape;—of 'characterize'; to distinguish; designate; depict; mark; describe; entitle.

CHARACTER, in psychology: that which distinguishes or marks off one mind from others, but also that which is common or typical in the mind in question. The first point emphasizes the fact of individuality and variety, just as, to say in popular language that a person is 'a character,' is to say that the person is odd, eccentric, a variation from the norm. From the second point of view, character is that which is normal, typical, or essential; thus, the judicious person who, for once, makes a quick, off-hand decision is not essentially himself, is not 'in character.' A person's character, then, is a uniform mode of behavior which differentiates that person from others. Character is closely allied to temperament or prevailing disposition. though it does not so definitely refer to emotional experience.

In art, a work of art is often said to have character when it has clearness and strength.

CHARACTERIS'TIC, in æsthetics: pertaining to the character or the essential nature of the object portrayed by art, used also as a noun. The charateristic in art is allied with the element of content, idea, significance, and expression, and is contrasted with the element of pure form. Although the principle of expression was not wanting in Greek art, yet it was not until the Christian era that it reached great importance. In the middle ages an art product was judged chiefly as an expression of some supersensuous reality. Now when the value of a work of art lies in its meaning or spiritual reference there is chance for individual interpretation, and this freedom stimulates

the subjective, mystic, and romantic attitude towards art. The recognition of individual bias in art, the respect for variation, is the basis of the doctrine of the characteristic. Its explicit adoption as an æsthetic principle dates from Goethe's essay in appreciation of Gothic architecture (1773) and in his later discussion of the problem with Hirt. Characterization, according to Goethe, is a rendering of those typical and essential attributes of an object which give it distinction. Its method is sketchy as compared with that of the classicist who insists on the pedantic rendering of details. The characteristic he contrasts with mere formal grace or decorative prettiness (the characteristic by itself may be ugly), but a synthesis of these two—the characteristic with formal correctness—results in Beauty. This conception of beauty frees the artist from strict regard for classic models, and gives greater variety of subject-matter to art.

The characteristic pushed to extremes, and unlimited by rules of formal beauty, becomes caricature.

See Bosanquet, *History of Æsthetic;* Fechner, *Vorschule d. Æsthetik.*

CHARACTERISTIC. See Logarithms.

CHARADE, n. *shă-rād'* [F. *charade*—from Prov. *charrada;* Norm. F. *charer;* Lang. *chara,* to converse; comp. Gael. *ciar,* dark; *radh,* a saying]: 'syllable-puzzle' (as the Germans call it) spoken or acted for amusement. The spoken kind consists in dividing a word of one or more syllables into its component syllables, or into its component letters, predicating something of each; and then, having reunited the whole, and predicated something of that also, the reader or listener is asked to guess the word.

CHARADRIADÆ, *kăr-a-drī'a-dē:* large family of birds, order *Grallatores,* tribe *Pressirostres;* abounding chiefly in the temperate parts of the old world.

CHARBON ROUGE, *shâr'bon rôzh,* or Red Charcoal: variety of charcoal obtained by subjecting wood to the action of heated air from furnaces or of steam, which has been raised to a temperature of 572° F.

CHAR'CAS. See Chuquisæa.

CHAR'COAL [see under Char]: popular term applied to charred wood, or coal produced by charring wood. There are several other varieties of charcoal, however, for which see Carbon; Bone-black (animal charcoal); Wood-charcoal; Coke; Black Lead; etc.

CHARCOAL-BLACKS: pigments made both from animal and from vegetable substances—e.g., burnt ivory, bones, vine-twigs, peach-stones, nut and other shells, the smoke of rosin condensed, etc. Those derived from vegetable substances, when mixed with white, are usually of a blue tint. See Lamb-black.

CHARD, n. *chârd* [F. *carde,* a chard—from It. *carda* —from L. *cardŭŭs,* the wild and esculent thistle]: the leaves or centre stalks of artichokes, beet, etc., blanched in their growth.

CHARE. See CHAR.

CHARENTE, *shâ-rŏngt′:* considerable river in the w. of France; rises in the dept. of Haute-Vienne, about 14 m. n.w. of Chalus. It first flows n.w. to Civray, where it turns southward into the dept. of Charente to Angoulême; thence it flows westward past Châteauneuf, Jarnac, and Cognac, and entering Charente-Inférieure, it runs n.w. past Saintes, and falls into the Atlantic below Rochefort, and opposite the islands Oléron and Aix. This river gives its name to two departments, both remarkable for the productiveness of their vineyards; but the wines are mostly used in the preparation of brandy and liqueurs.

CHARENTE, *shâ-rŏngt′:* department of France, formed chiefly out of the old province of Angoumois; It is generally hilly, and is watered by the river Charente (q.v.), and its tributaries, the Tardouère and the Bandiat, with the rivers Vienne and Dronne. The highest chain of hills in the north of Charente is a continuation of the heights of Limousin, forming the watershed toward the Loire. Remains of marine productions show that the basin of the Charente was formerly filled by the ocean. The climate is generally mild and healthful. The wines grown are spirituous and fiery in flavor, and are chiefly used in the manufacture of Cognac, which is the most important export. Truffles grow abundantly in several parts. Charente is divided into the five arrondissements of Angoulême, Cognac, Ruffec, Barbezieux, and Confolens. Pop. (1901) 350,305.

CHARENTE-INFÉRIEURE, *shâ-rŏngt′ ăng-fā-rē-ėr′:* maritime dept. of France, which includes the former province of Angoumois, with the greater part of Saintonge, and a small portion of Poitou. The commerce is considerable, consisting chiefly of brandy and sea-salt, which is abundant. The oyster and pilchard fisheries are important. The chief harbors are those of Rochefort and La Rochelle, the latter of which is the chief town. Charente-Inférieure is divided into the six arrondissements of La Rochelle, Rochepfort, Marennes, Saintes, Jonzac, and St. Jean-d'Angely. Pop. (1901) 452,149,

CHARGE, n. *chârj* [F. *charger*, to load, to place in a car—from Sp. *cargar;* It. *caricare*, to load—from mid. L. *carrĭcārĕ*, to load—from L. *carrus*, a car]: a suitable load of any kind; the quantity of powder and shot or balls necessary to load a gun or cannon; that which is laid or imposed on; an onset or attack, as on an enemy in battle for the purpose of driving him from a particular position, or even destroying his force: any person, thing, or business intrusted or delivered over to another; a trust; exhortation or instructions by a judge to a jury, or by a bishop to his clergy; a solemn direction or command; accusation or imputation; the transactions that constitute a debt; cost; expense; rent or tax on property; the quantity of electricity sent into a coated jar; in *her.*, that which is borne on the field or color: V. to fill or supply with a suitable quantity,

as a gun or a wine-glass; to load as a gun; to rush on; to attack; to lay on, as a tax; to intrust to; to set down to, as a debt; to blame; to censure; to accuse; to command, exhort, or enjoin; to give directions to, as a judge to a jury, or a bishop to his clergy; to fill with electricity. CHAR'GING, imp. CHARGED, pp. *chârjd.* CHAR'GER, n. the person who charges; a war-horse; a large dish. CHARGEABLE, a. *chârj'ă-bl,* that may be laid upon or charged to; liable to be charged; expensive or costly. CHARGE'ABLY, ad. *-blĭ.* CHARGE'ABLENESS, n. expense; cost. CHARGE AND DISCHARGE, in a financial statement, as by the cashier of a corporation: CHARGE is a brief view of all the particulars of income, and DISCHARGE, a brief view of all the particulars of expenditure, compared and balanced. CHARGEFUL, a. in *OE.*, costly; expensive.—SYN. of 'charge, n.': care; custody; government; trust; expense; cost; price; management; administration; onset; attack; assault; command; order; control; injunction; mandate;—of 'charge, v.'; to accuse; criminate; attack; indict; arraign; impeach; load; impose; request; exhort; address; debit.

CHARGE, *chârj,* in Heraldry: figures represented on a shield. A shield with figures upon it is said to be charged (Fr. *chargé*). The charges in a shield ought to be few in number, and strongly marked, as regards both their character and the mode of their representation. The family shield, belonging to the head of the house, almost always is simpler, i.e., has fewer charges, than the shields of collaterals, or even of junior members.

CHARGE, in Military Pyrotechny: sufficient material (usually the explosive material) for one firing or discharge. It is applicable to all kinds of firings, fireworks, and explosions; but the name is generally given to the quantity of gunpowder requisite for firing off a gun, etc. In cannon, this varies greatly, from $\frac{1}{2}$ to $\frac{1}{16}$ of the weight of the shot; some of the rifled ordnance now coming into use are remarkable for the smallness of the charge with which they are fired. For the quota of charge, see the various titles of fire-arms. In breaching a wall, a greater charge is necessary than in attacking a ship or a column of troops, even with the same kind of gun and projectile.

CHARGE, in the Law of Scotland: command to perform an act, conveyed in the letters of the sovereign; also the messenger's copy which he is to serve, requiring the person to obey the order contained in the letters.

CHARGE, ELECTRIC. (1) The same as an electrostatic charge. (2) Sometimes used to denote the electrical effort produced by the passage of electric current into a storage battery from an outside source. See BATTERY, STORAGE. (3) Electrical conductors, such as wires and cables, used for the transmission of electric current, are said to be 'charged' when current is passing over them. See ELECTRICITY, PRINCIPLES OF.

CHARGE, ELECTRO-STATIC: the electrical condition

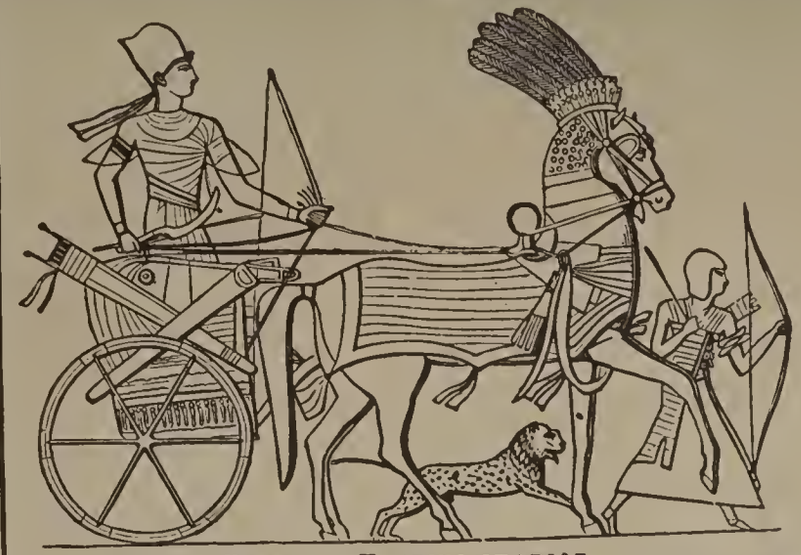
which results when two bodies, not electrically connected together, are subjected to an electrical potential or pressure, the bodies being insulated so that no electricity can escape. The electricity accumulates on the two bodies 'charging' them oppositely. Their accumulated electricity can be taken away by connecting the two together by means of any electrical conductor. Almost instantly, the 'charge' is dissipated by the passage of current through the wire from the body of high potential to that having the lower, so that the electrical pressure between the two is equalized. In short, any two adjacent bodies between which a difference in electrical pressure exists may be said to be charged. A familiar example is that of clouds, between two of which the difference in pressure may become so great that the electric current is impelled to pass through the air from one to the other to equalize the difference in pressures, despite the enormously great opposition that air offers to the passage of current. The same effect is also observable when the cloud may be highly charged with respect to the earth, or conversely when the cloud potential is so low that it is far below that of the earth. In such cases when the difference of potential (or electrical pressure) between the two is sufficiently great, current is urged through the air from the body having the higher potential to that of the lower, to equalize the difference in pressure.

This 'discharge' from cloud to cloud, from cloud to earth, or earth to cloud, as the case may be, manifests itself in a brilliant flash, which is accompanied by a loud noise, such as is usual with any explosion, and these two phenomena are the familiar *Lightning* and *Thunder*. See CONDENSER and ELECTRICITY, PRINCIPLES OF.

CHARGE, RESIDUAL. When any two bodies electrostatically charged with respect to each other (see CHARGE, ELECTRO-STATIC) are discharged by a momentary passage of current from one to the other, the total difference of potential is not equalized. After the lapse of a few moments, subsequent to an instantaneous discharge, it will be found that the molecules of the two bodies have rearranged themselves, and a small difference of potential still exists. If the bodies be connected by means of a conductor of electricity, a second discharge, much smaller than the first, may be obtained, which is known as the residual charge.

CHARGE D'AFFAIRES, n. *shâr-zhā' dăf-fâr'* [F. charge or care of matters]: fourth-class diplomatic agents, accredited, not to the sovereign, but to the dept. for foreign affairs; they also hold their credentials only from the minister, and are sometimes only empowered by an ambassador to act in his absence.

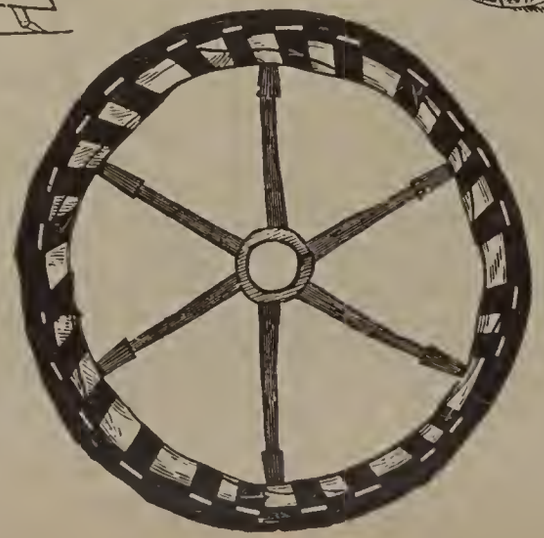
CHARGER: a war-horse, trained, and, in the middle ages before the use of gunpowder, usually clad in armor. They were then said to be *barbed* or *barded*, from an old Fr.



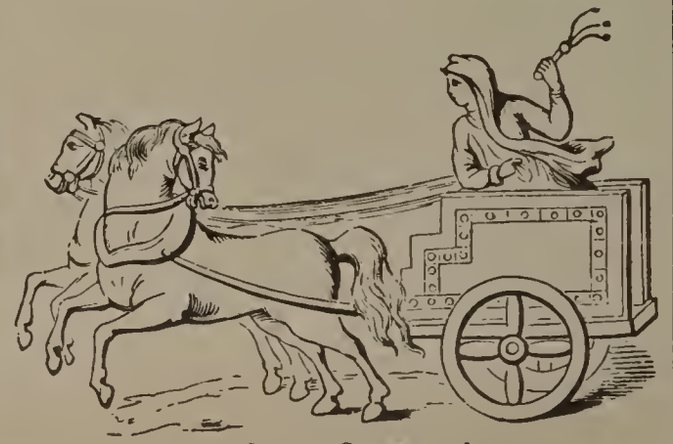
EGYPTIAN HUNTING-CHARIOT.

GRECIAN LADY'S QUADRIGA.

TRIUMPH OF TITUS.



COMPLETED CHARIOT WHEEL.



SAXON CHARIOT.[1]

word implying covered, clothed, or armed. The face, the head, and the ears were covered with a mask called a *chanfron*, to prevent fright when charging the enemy; and an iron spike projected from the middle of the forehead. The neck was defended by small plates called *crinières;* the breast by a *poitrinal;* and the buttocks and haunches by *croupières.* These various pieces of armor were mostly of metal, sometimes of tough leather. The horse was occasionally covered with chain-mail; and in other instances with a *gambeson* of stuffed and quilted cloth. The man-at-arms generally rode another horse when not charging, to relieve the charger from his great burden. A war-horse is still called a charger, though not armed as in ancient times.

CHARILY, ad., CHARINESS, n.: see under CHARY.

CHARIOT, n. *chăr′ĭ-ŏt* [F. *chariot*—from *char*, a car; L. *carrus;* It. *carro*, a two-wheeled cart]: a four-wheeled vehicle; a light kind of coach with a front seat only; a war-coach; a car. CHAR′IOTEER′, n. *-ŏ-tēr′*, the driver of a war-chariot in ancient times. The chariot was used in ancient times either for pleasure or in war. According to the Greeks, it was invented by Minerva; while Virgil ascribes the honor to Erichthonius, mythical king of Athens, who is said to have appeared at the Panathenaic festival founded by him, in a car drawn by four horses. The ancient chariot had only two wheels, which revolved upon the axle, as in modern carriages. The pole was fixed at its lower extremity to the axle, and at the other end was attached to the yoke, either by a pin or by ropes. The Greeks and Romans seem never to have used more than one pole, but the Lydians had carriages with two or three. In general, the chariot was drawn by two horses. Such was the Roman *Biga* (q.v.), but we also read of a *triga*, or three-horse chariot, and a *quadriga*, or four-horse one. The last was that in which the Roman generals rode during their triumphal entrance into the city, and was often adorned with splendid art. The war-chariot held two persons—the soldier himself and the driver, the latter of whom usually occupied the front; but the chariots used by the Romans in their public games held only the charioteer.

The oldest war-chariots of which we read are those of Pharaoh (Exodus xiv. 7). All the eastern nations used them, while we learn from Cæsar (*De Bell. Gall.*, v. 19) that the Britons also were familiar with their use.

CHARISTICARIES: ecclesiastical functionaries in the Greek Church having charge of the revenues of hospitals and monasteries.

CHAR′ITABLE USES and LAW OF CHARITIES: Relating to all kinds of beneficent trusts or endowments, public or private, for the poor or distressed, for purposes of education and religion, of science and art, and for whatever object or person that may be properly regarded as tributory to these. Law has always anxiously, though often inaffectually, sought to provide for the preservation and

proper application of all endowments for charitable beneficent purposes. In England, the preceding efforts of the legislature in this direction may now be said to have been superseded by the charitable trusts acts which contain a species of code of charity law (16 and 17 Vict. c. 137; 18 and 19 Vict. c. 124; 23 and 24 Vict. c. 136; and 32 and 33 Vict. c. 110); see CHARITY COMMISSIONERS.

The courts of equity are those which in general take cognizance of all charitable uses of trusts of a public description. Under the authority of these tribunals—or, of the county courts in cases of annual income not exceeding £50—very species of judicial relief may be afforded which such institutions require for carrying into effect the purposes of donors. Where the management of the charity has been confided by the donor to governors and other functionaries, the law will not interfere with their proceedings unless they can be shown to be squandering the revenues or otherwise abusing the trust. The charity or other benevolent purpose must be for *public* benefit in some sense; 'for if a sum of money be bequeathed, with direction to apply it to such purposes of benevolence and liberality as the executor shall approve,' or even 'in private charity,' the law will take no notice of such a trust.

Legacies to pious or charitable uses are not usually entitled by law to a preference, though such was the doctrine of the civilians; but where a deficiency of assets arises, they are abated in proportion with the others.

In the United States the decisions in the English courts have largely been accepted as precedent for judicial decisions on charitable trusts. There are, however, some notable exceptions; and the statutes of various states show wide differences. In general equity courts show favor to charitable uses.

CHARITIES. See PUBLIC CHARITIES.

CHARITON, *chăr'i-ton*, or GRAND CHARITON; river of Iowa and Missouri. It rises in Lucas co., Iowa, flows s. through Adair, Macon, and Chariton counties, Mo., and enters the Missouri river 4 m. above Glasgow. Its length is about 250 m., 50 of which are navigable. It is fed by the East Chariton and the Middle Branch.

CHARITY, n. *chăr'ĭ-tĭ* [F. *charité;* It. *carita*—from L. *carĭtas*, high regard, high price or value—from *cārus*, dear]: kindness; love; that disposition of heart which inclines men to think well of others, and do them good; candor; liberality to the poor; that which is given to the poor; an institution for the poor. CHAR'ITABLE, a. *-tă-bl*, benevolent in disposition; kind in words and actions; kind in judging the acts and words of others; liberal in relieving the necessities of the distressed according to ability. CHAR'ITABLY, ad. *-blĭ*, kindly; benevolently; liberally. CHAR'ITABLENESS, n. *-tă-bl-nĕs*, the disposition of a charitable person.—SYN. of 'charitable': benevolent; indulgent; kind; liberal; favorable; generous; beneficent;—of 'charity': benevolence; affection; good-will; love; indulgence, tenderness; liberality.

CHAR'ITY, Sisters of: see Sisters of Charity.

CHARITY COMMISSIONERS: body of commissioners for England and Wales, created 1853, by the charitable trusts act, 16 and 17 Vict. c. 137 (see Charitable Uses). with power to inquire into all charities in England and Wales, with reference to their nature, objects, and administration, and the amount and condition of the property belonging to them. The commissioners have power to call for the production of accounts and documents from trustees, and to appoint inspectors to visit and report on their management. The statute does not extend to the English universities, or to the city of London. An annual report of their proceedings must be laid before parliament by the commissioners.

CHARIVARI, n. plu. *shâ'rē-vâ'rē* [F.; really an imitative word having its origin in slang]: mock serenade of discordant music with such accompaniments as tin kettles, shouting, whistling, groaning, hissing, and screaming, and the like, meant for the annoyance and insult of an obnoxious person. The etymology of charivari is obscure; the Germans translate it by *Katzenmusik*, to which in English *Cat's-concert* corresponds. *Note.*—Carry-warry, *kăr'ĭ-wăr'ĭ*, is a Scotch word identical in meaning with the F. word, the one being probably a derivative or accommodation from the other, but which is the primary is uncertain. In France, during the middle ages, a charivari, was generally raised against persons contracting second nuptials, in which case the widow was specially assailed. On these occasions, the participators in it who were masked accompanied their hubbub by the singing of satirical and indecent verses, and would not cease till the wedding couple had purchased their peace by ransom. Charivari answers to the English concert upon 'marrow-bones and cleavers,' with which it was customary to attack a married couple who lived in notorious discord. It was also called out by an unequal match when there was great disparity in age between the bride and bridegroom.

Similar customs seem to have existed under different names in all parts of Europe, and sometimes of such licentious and violent character as to require military interference to put them down. Even as early as the 14th c., the church found itself forced to threaten punishment and even excommunication against those who participated in them. In more recent times the charivari has taken a purely political coloring; as, for instance, during the restoration in France, at which time, however, the popular voice began to seek vent by casting its satirical darts against public men through the press. The papers published for this purpose were called charivari, the most famous among which is *the* Charivari, celebrated Fr. comic paper, established in Paris, 1832, Dec. 2, corresponding to the English publication *Punch* (q.v.).

CHARK, v. *chârk* [AS. *cearcian*, to creak, to crash; Lith. *kirkti*, to cry, to creak]: to burn and make crisp; in *OE.*, to burn to a black cinder as wood to charcoal:

N. black burnt and crisp material; charcoal. CHARK'ING, imp.: N. the process of making wood into charcoal. CHARKED, pp. *chârkt.*

CHARKOV': see KHARKOV.

CHARLATAN, n. *shâr'lă-tăn* [F. and Sp. *charlatan*, a mountebank—from Sp. *charlar* to chatter; It. *ciarlatano*, a quack doctor]: mountebank, quack doctor, or empiric; hence any one who makes false pretensions to knowledge or skill. The word is probably derived from the Ital. *ciarlare*, to babble or talk, the chief art of the charlatan consisting in talk. The medical charlatan no longer appears on a stage in the guise of Doctor Ironbeard, but as a fine-dressed gentleman, receiving grateful acknowledgments through the newspapers, and publishing popular medical books, with the address of the author, and recommendations to apply to him. It has frequently happened, however, that extraordinary men who were so far before their age as not to be understood by it, such as Paracelsus, have passed for charlatans until more justly estimated in later times. Several books have been written on the charlatanism of scholars. J. B. Mencke's satire, *De Charlataneria Eruditorum* (Leip. 1715), is a classical work, which has been continued by Büschel in his book, *Ueber die Charlatanerie der Gelehrten seit Mencke.* CHAR'LATAN'ICAL, a. *-ĭ kăl*, making undue pretensions to skill; quackish. CHAR'LATANRY, n. *-rĭ*, quackery; deceit. CHAR'LATANISM, n. *-ĭzm*, the conduct, arts, or character of a charlatan.

CHARLEMAGNE, *shâr-le-mān'*, or *shârl-mân'*, i.e., Charles the Great: 742, Apr. 2—814, Jan. 28: King of the Franks (768–814) and Roman emperor (800–814); b. probably at Aix-la-Chapelle; son of Pepin the Short, the first Carlovingian (q.v.) king of the Franks, and grandson of Charles Martel (q.v.). On Pepin's death, 768, he and his brother Carloman jointly succeeded to the throne. By Carloman's death and the exclusion of both his sons from the throne, Charlemagne became sole king. In 772 it was resolved in the diet at Worms to make war against the Saxons for the security of the frontiers which they continually threatened, and for the extension of the Christian religion. Charlemagne advanced as far as the Weser, 772, securing his conquests by castles and garrisons. Pope Adrian I. now called him to his aid against Desiderius, king of the Lombards. Charlemagne had married the daughter of Desiderius and had sent her back to her father because she bore him no children, and married Hildegarde, daughter of the Swabian duke, Godfrey. Desiderius had sought revenge by urging the pope to crown the sons of Carloman, and on the pope's refusal had laid waste the papal territory. Charlemagne crossed the Alps from Geneva with two armies by the Great St. Bernard and Mont Cenis, 773, and overthrew the kingdom of the Lombards, 774. The Lombard dukes acknowledged him as their king, and he secured the pope's favor by confirming the gift which Pepin had made to the papal see of the ex-

CHARLEMAGNE.

archate of Ravenna. In 775 he was again employed in the most northerly part of his dominions reducing the Saxons to subjection; in 776 he suppressed an insurrection in Italy; in 777 he so completed his victory over the Saxons that their nobles generally acknowledged him as their sovereign in an assembly at Paderborn. Being now invited to interpose in the wars of the Arabs and Moors in Spain he hastened to that country, 778, and added to his dominions the regions between the Pyrenees and the Ebro. From Spain he was summoned in haste by a new insurrection of part of the Saxons who had advanced almost to Cologne, but whom he drove back to the Elbe. In 781 he went to Italy where the pope crowned his second son, Pepin, king of Italy, and his third son, Louis, an infant of three years old, king of Aquitaine. The Saxons once more rising in arms, defeated and destroyed a Frankish army on the Süntel, 782, which Charlemagne, after a new victory, fearfully revenged by causing no fewer than 4,500 prisoners to be executed as rebels in one day. A more general rising of the Saxons followed, but in 783–785, the Frankish monarch succeeded in reducing them completely to subjection, and in persuading their principal chiefs to submit to baptism and to become his faithful vassals. Subsequent insurrections and wars in Germany between this year and 800 resulted in victories over the Bulgarians and Huns, and in the further consolidation and extension of his empire, the eastern boundary of which now reached to the Raab.

In 800 Charlemagne undertook an Italian campaign which was attended with most important consequences. Its immediate purpose was to support Pope Leo III. against the rebellious Romans. When Charlemagne, on Christmas Day, 800, was worshipping in St. Peter's Church, the pope unexpectedly, as it appeared, set a crown upon his head, and amid the acclamations of the people saluted him as Carolus Augustus, emperor of the Romans. Although this added nothing directly to his power yet it greatly confirmed and increased the respect entertained for him, such was still the lustre of a title with which were associated recollections of all the greatness of the Roman empire. A scheme for the union of the newly-revived western empire with the empire of the east by Charlemagne's marriage with Irene (q.v.) the Byzantine empress, failed by reason of Irene's overthrow. After this Charlemagne still extended and 'confirmed his conquests both in Spain and in Germany. He labored to bring the Saxons to a general reception of Christianity, and founded bishoprics for this purpose. To the end of his reign he was incessantly engaged in wars, and insurrections were always apt to break out on the frontier parts of his dominions; though he endeavored to secure those regions not only by military power and arrangements but by improvements in political and social institutions. His views were liberal and enlightened to a degree rare for many subsequent ages. While he made

the power of the central government felt to the utmost extremities of his empire, he recognized in his subjects civil rights and a limitation of monarchic power by their assemblies. He zealously endeavored to promote education, agriculture, arts, manufactures, and commerce. He projected great national works, one of which was a canal to connect the Rhine and the Danube, but he deemed nothing beneath his attention which concerned the interests of his empire or of his subjects. He required his subjects to plant certain kinds of fruit-trees, the cultivation of which was thus extended northward in Europe. His own domains were an example of superior cultivation. He had a school in his palace for the sons of his servants. He built sumptuous palaces, particularly at his favorite residences, Aix-la-Chapelle and Ingelheim—for he had no fixed capital—and many churches. Learned men were encouraged to come to his court. He himself possessed an amount of learning unusual in his age; he could speak Latin and read Greek. He attempted to draw up a grammar of his own language. Charlemagne was of more than ordinary stature, had good health, and a noble and commanding appearance. He was fond of manly exercises, particularly of hunting. He was too amorous, but in eating and drinking he was very moderate. His fame spread to all parts of the world; in 768 Harun-al-Raschid sent ambassadors to salute him. He was buried at Aix-la-Chapelle (q.v.) in a church which he had built there. He was succeeded by his son Louis, styled Louis le Débonnaire, the only one of his sons who survived him; but the greatness of his dynasty terminated with his own life. Charlemagne is styled Charles I. in the enumeration both of the French kings and of the German or Roman emperors. Besides his *capitularies* (q.v.) there are extant letters and Latin poems ascribed to him. His life was written by his secretary, Eginhard.

CHARLEROI, *shâr-le-roy'*, or *shâr-leh-rwâ':* Belgian town and fortress, province of Hainaut: on the Sambre, between Mons and Namur on the line of the Brussels and Namur railway. The people do considerable manufacturing in hardware, glass, woolen-yarn, etc. The district is rich in coal, and the number of smelting-furnaces and nail-factories in the neighborhood is very great. The iron-works of Couillet, which yield a third of all the cast-iron produced in Belgium, lie within a mile or two of the town. Charleroi has historical and political interest as a fortress. The fortifications were begun by the Spaniards, 1666, but falling into the hands of the French next year they were completed by Vauban. After six exchanges of masters between the French and Spaniards, the peace of Aix-la-Chapelle, 1748, left Charleroi in the possession of Austria. In 1794, after a protracted and desperate resistance, it was surrendered to the French by capitulation when the fortifications were demolished. The importance of the place in a strategic point of view having become apparent during the campaign of 1815, the fortifications have been since restored. Pop. (1901) 25,112.

CHARLES I., King of England, Scotland, and Ireland, 1600, Nov. 19—1649, Jan. 30 (reigned 1625–49): b. Dunfermline, Scotland; second son of James I. of England (VI. of Scotland). On the death of his elder brother, Henry, 1612, he became prince of Wales, and heir-apparent to his father's throne; to which he succeeded 1625, but found in both England and Scotland a contest in progress between king and people. He had inherited from his father the most extreme notions of kingly prerogative, and he mistook the general movement in the public mind for an agitation among a few disaffected persons. He had deeply imbibed his father's notion, that an episcopal church was the most consistent with the proper authority of kings; and he adopted severe and persecuting measures against the Puritans in England and the Presbyterians in Scotland. He married a Roman Catholic, Maria Henrietta, of France, a marriage most displeasing to the nation; and even so far despised public opinion as to make his father's favorite, the duke of Buckingham, his prime minister and chief adviser. The English parliament, which he assembled, 1625, was resolved upon the vindication of the national liberties, and was therefore very sparing in its grants of subsidies; and that of 1626, instead of freely granting supplies, resolved upon the impeachment of Buckingham; whereupon the king threw into prison two of the boldest members, Elliot and Digges; dissolved parliament; and, to procure money, had recourse to the arbitrary measures of forced loans, and a tax upon the seaports (*ship-money*), imposed by the mere exercise of royal authority. By all this public feeling was more and more embittered. In 1628, C. found it necessary again to summon a parliament; and the parliament, very resolute to maintain the liberties of the nation, presented the petition known in history as the *Petition of Right* (q.v.). C. temporized, conceded, and finally, although,the assassination of Buckingham had removed one cause of strife, assumed a threatening tone, and dissolved the parliament, 1629, Mar. 10. He even caused some of the leading members of the house of commons to be imprisoned. He now governed for 11 years without a parliament, having Laud (q.v.) and Strafford (q.v.) for his chief advisers, and obtaining for his edicts the semblance of a legal sanction by means of the star chamber (q.v.). All this while the storm was gathering, the love of liberty increased, and republican principles were developed and extended. The policy which C. adopted was that of more severe repression. At length, 1638, Scotland assumed an attitude of determined resistance to the imposition of a liturgy and of episcopal church-government. The national covenent (q.v.) was subscribed, presbyterianism was completely restored; and in 1639, the king having assembled an army for the purpose of reducing Scotland to subjection, the Scottish covenanters also took up arms, and advanced to the English border, many of the English regarding their approach with joy. Civil war was, however, prevented for the time, by concessions on the part of the king. Unable to do without supplies any longer, C. summoned an English parliament, 1640, which, instead

of listening to his demands, began to draw up a statement of public grievances. C. soon dissolved the parliament, and assembled an army to resist the Scots, who had again taken up arms and entered England; but his army was defeated by them at Newburn-upon-Tyne, and they advanced southward, with the sympathy and good-wishes of no small part of the king's English subjects. Much against his will, C. was now compelled again to call a parliament, whose memorable sittings began 1640, Nov. 3. Both houses were resolute in their opposition to his despotism. They began by the impeachment of the ministers and high officers of state, and declared the decrees of the star chamber and court of high commission null and void. They passed a bill in favor of triennial parliaments; and the king, in trepidation, gave it his assent. He also consented, although against his own convictions, to the execution of Strafford; and even gave his assent to an act which provided that the present parliament should not be dissolved, prorogued, or adjourned, without its own consent. Hoping to win the favor of the Scots he now visited Scotland; but while he was there a rebellion broke out in Ireland, accompanied with a fearful massacre of Protestants. The prospect of a peaceful accommodation was now almost destroyed; the English parliament enlarged its demands; the king, after seeming to yield, took the extraordinary step of suddenly, 1642, Jan. 4, appearing in the house of commons, accusing five members—Pym. Hampden, Hollis, Hazelrig, and Stroud—of high treason, and demanding that they should be delivered up to him. Both houses of parliament espoused their cause, and the city of London showed a determination to defend them by arms. C. left London with his family and the parliament declared the kingdom in danger. Civil war began; the royalists had at first the advantage, but the national feeling was with the parliament. Negotiations were from time to time opended or renewed, but always in vain. After the battle of Naseby, 1645, June 15, in which the king's army was almost annihilated by the parliamentary troops under Fairfax and Cromwell, C. was compelled to seek refuge in the Scottish camp. Negotiations still proving fruitless he was delivered up to the English parliamentary army. Negotiations were still attempted with C. in his captivity, but resulted in nothing. Finally, C. fled, was taken, refused the ultimatum of the army, and so enraged Cromwell and the independents that parliament was obliged to pass an act declaring all negotiation with the king to be treason. The Presbyterians of England and the Scots, who were always haunted by the notion that there was something sacred and inviolable in monarchy, thought to rescue the king from the hands of the independents, but were defeated; and all the Presbyterians were forcibly expelled from the English house of commons, which now consisting only of about 60 members—the *rump parliament*—appointed a court composed of persons from the army, the house of commons, and the city of London, to try the king. The court was opened with great solemnity in Westminster hall, 1649, Jan. 20. About 70 members took part in its

proceedings. On Jan. 27, C. was condemned to death as a tyrant, murderer, and enemy of the nation. The Scots protested, the royal family entreated, and the court of France and states-general of the Netherlands interceded, but in vain. In 1649, Jan. 30, he was beheaded in front of the palace of Whitehall. In his last hours he showed great calmness and presence of mind. In his private character, C. was a man of cultivated mind, kind, and of irreproachable life; but in political affairs he was unscrupulous, and had recourse to dissimulation and falsehood for the accomplishment of his purposes. In the estimation of many, who do not condemn it on moral grounds, his execution is deemed a great political blunder. From the restoration of Charles II., Jan. 30 was observed in the Church of England with special religious services, as the day of *King Charles the Martyr*. This commemoration, offensive to a great part of the community, and of the members of the Established Church itself, was abolished by act of parliament, 1859.

CHARLES II., King of England, Scotland, and Ireland: 1630, May 29—1685, Feb. 6 (reigned 1649–85); eldest son of Charles I. He went with his mother to France during the civil war. He was at the Hague at the time of his father's execution, and immediately assumed the title of king. He mediated an expedition to Ireland for the assertion of his claims, when the Scots offered him their crown in 1650, and proceeding to Scotland he was crowned at Scone in the beginning of 1651. The limitations, however, under which he received the crown were disagreeable to him, and he hated the restraint put upon his inclinations by the Presbyterian clergy. After the defeat of the Scots at Dunbar, he put himself at the head of their army, in hope of rousing the royalists of England to his support; but was completely defeated by Cromwell, at Worcester, 1651, Sep. 3. He made his escape, amid many dangers, to France, where his situation was not agreeable and from which he went to Cologne, and afterward to the Netherlands. After Cromwell's death the desire of the English for a settled government, leading to the restoration of the house of Stuart, he landed at Dover, 1660, May 26; was received with acclamation by the people, and ascended the throne almost untrammelled by a single condition. He was surrounded by men of extreme party-feeling, among whom the most influential was the chancellor, Clarendon (q.v.). The persons immediately concerned in the death of Charles I. were brought to the scaffold; Episcopacy was restored; and the Independents, Presbyterians, and other nonconformists, both in England and in Scotland, were subjected to great hardship and persecution. The king was extravagant, and soon found himself in want of money, he married the Princess Catharine of Portugal, for the sake of her large dowry; he shamefully sold Dunkirk and Mardyke to the French, and, for a pecuniary consideration, agreed to make war against the united provinces, although such a war was contrary to all the feelings of the English people and the interests of English commerce. The Dutch fleet,

under De Ruyter, entered the Thames, and C. was compelled to make an ignominious peace. After the fall of Clarendon, the ministry known as the Cabal (q.v.) ministry came into power—a ministry hateful to the country, composed of unprincipled men, and bent upon the restoration of popery and of absolute monarchy. C. sought to conciliate the people by the *Triple Alliance*, 1668, May, with Sweden and the states-general, but the French court soon found means to persuade him again to make war against the united provinces. He basely accepted pecuniary gifts and a pension from the French government; and, as even this, with all that he could get from his parliament, was insufficient for his expenses, he had recourse to illegal means of raising money. The story of the *Popish Plot* (q.v.) against the life of the king caused prodigious excitement among the people, and Lord Stafford and many other persons were most unjustly brought to the scaffold. The parliament of 1679, very much against the will of the court, enacted the celebrated *Habeas Corpus Act* (q.v.); and a bill was under consideration for the exclusion of the king's brother, the Duke of York, from the throne, on account of his avowal of the Rom. Cath. religion. The king, at this period of his reign, had, however, completely crushed the Presbyterians of Scotland, and was more absolute than any of his predecessors had been on either of the British thrones. Most arbitrary measures were adopted. The city of London was deprived of its privileges, because of the election of a sheriff disagreeable to the court. The *Rye-house plot* (q.v.), a widely extended conspiracy, in which the king's natural son, the Duke of Monmouth (q.v.), was concerned, was discovered 1683, and cost the lives of a number of persons, among whom were Lord Russell and Algernon Sidney. C., however, appears to have recognized the necessity of a more liberal policy, when he was unexpectedly carried off by death. In his dying hours he called in the assistance of a Rom. Cath. priest, though he had not previously avowed his attachment to that religion. His reign was full of events dishonorable to his country, and of which he himself was generally the cause. His life was most dissolute—his adulteries and the profligacy of his court scarcely paralleled in British history. He had an affability, however, which won for him a certain sort of popularity.

CHARLES I., surnamed THE BALD, King of France: see CARLOVINGIANS.

CHARLES II., surnamed THE FAT, King of France: see CARLOVINGIANS.

CHARLES III., THE SIMPLE, King of France. 879–929 (reigned 887–922); posthumous son of Louis the Stammerer. The early part of his reign was merely nominal; but Eudes, who succeeded Charles the Fat, was forced by the emperor to cede Neustria, and on Eudes's death, 898, C. gained the entire kingdom. By his treaty with the Normans, 911, they accepted baptism and received Normandy, and their chief, Rollo, married C.'s sister and became duke.

The barons rebelled, 922, and elected Robert, brother of the late king; when C. killed him at the battle of Soissons, they elected Raoul, Duke of Burgundy. Herbert, Count of Vermandois, whom C. trusted, betrayed and imprisoned him; Raoul released him, and he died at Peronne.

CHARLES IV., surnamed THE FAIR, King of France and Navarre: see CAPETIAN DYNASTY.

CHARLES V., surnamed THE WISE, King of France, 1337, Jan. 21—1380, Sep. 16 (reigned 1364–80); son of King John. His father being made prisoner by the English at the battle of Poictiers, 1356, Sep. 19, he assumed the regency. The most significant events during his rule were the vigorous efforts of the *bourgeoisie* to deliver themselves from the tyranny of the nobles and the court and the peasant war called the *Jacquerie* (q.v.) At his father's death, 1364, Apr. 8, C. ascended the throne, and by his cautious policy rescued the kingdom from some of its troubles, and re-established the power of the crown, which had been much shaken. War with England raged for a number of years, but with results highly favorable to C., who stripped his enemies of all their conquests in France, except a few fortified places. C. was fond of books and the company of learned men, but was not above the natural weakness of kings for outward pomp and magnificence.

CHARLES VI., King of France: 1368, Dec. 3—1422, Oct. 21 (reigned 1380–1422); b. Paris; son and successor of Charles V. He was only 13 years of age when his father died. For several years, his uncle, the Duke of Anjou, acted as regent. In 1388, C. took the reins of government into his own hand, but during his lifetime was so often afflicted with insanity, that party-strife raged without much check. The two great families whose influence divided the nation were those of Orleans and Burgundy. It was the Orleans party which called in the assistance of the English, and brought about the battle of Agincourt, so disastrous to the French nation. Subsequently the Burgundians allied themselves to the English, who laid waste the whole of northern France. In the midst of these calamities C. died.

CHARLES VII., King of France: 1403, Feb. 22—1461, July 22 (reigned 1422–1461); son and successor of Charles VI. On his father's death he was at the head of an army, with which he held possession of the s. provinces of the kingdom, Paris and the n. being in the hands of the English, who proclaimed Henry VI. of England king of France, and appointed the Duke of Bedford regent. For some time the events of war were unfavorable to C., who was compelled, 1424, to evacuate Champagne, and, 1425, Maine. In 1426, the Count Dunois gained the first victory over the English at Montargis; but in the year following they beseiged Orleans, a place of great importance to C., as securing a connection with the north, and he was roused to fresh energy. At this time, also, Joan of Arc (q.v.), the Maid of Orleans, by her wonderful courage and confidence of a heavenly mission, roused the fervor both of nobles and of

people. The siege of Orleans was raised, 1429, May; the English retired disheartened and gradually lost their aquisitions in France. A treaty between the French king and the Duke of Burgundy greatly advanced the French cause. In 1436, C. entered Paris; and during the further progress of the war, the English lost all their strongholds except Calais. In 1452, they were finally defeated at Castillon. After he was established on his throne C. devoted himself to the reorganization of the government, in which everything had fallen into confusion, but showed a strong anxiety to frame it according to a scheme of perfect despotism, and for this purpose to provide himself with a powerful and well-disciplined standing army, which caused some discontentment among the nobles of his kingdom. His government, however, was mild, and under it France recovered in some measure from the effects of the terrible calamities which it had endured. His last years were embittered by the conduct of his son, the Dauphin, afterward Louis XI.; and his apprehension that his son would poison him was so strong that his subsequent abstinence from food is supposed to have hastened his death at Melum.

CHARLES VIII., King of France: 1470, June 30—1498, Apr. 7 (reigned 1483–98); b. Amboise: succeeded to the throne on the death of his father, Louis XI. For some time the government was carried on under the regency of his sister, Anne of Beaujeu. When C. attained his 21st year, he took the royal power into his own hand, and soon developed a bold and ambitious spirit. The most important incident of his career was his conquest of Naples, 1495, to the throne of which he believed he had a claim. The Italian princes and other European potentates were alarmed by his success. A league was hastily formed between the pope, tho emperor of Germany, Ferdinand of Spain, the republic of Venice, and Sforza, Duke of Milan, to oppose his return to France. C., however, gallantly broke through the allied forces near Piacenza, and effected a retreat to his own country. It was with difficulty he was hindered by his councillors from resuming his warlike designs on Italy. C. is said also to have meditated the expulsion of the Turks from Europe, and making himself emperor of Constantinople, having received from Andreas Palæologus, the grandson of the last Grecian emperor, a transference of his claims to the Byzantine throne.

CHARLES IX., King of France: 1550, June 27—1574, May 30 (reigned 1560–74); b. St. Germain-en-Laye; second son of Henry II. and of Catharine de' Medici (q.v.). He succeeded to the throne on the death of his brother, Francis II. His character was a compound of passion, acuteness, heartlessness, and cunning. Although only 24 years of age when he died, so well had his detestable mother trained him to perfidy and cruelty that he found time, with her assistance and that of the Guises, to perpetrate an act so hideously diabolical that all civilized Europe still shudders at the recollection. The massacre of St. Bartholomew's (q.v.), 1572, Aug. 24, was the culmination of a series of treacheries

toward the Huguenots which disgraced his reign. The result was that civil war broke out anew, and assumed a very threatening character, as political malcontents associated themselves with the Protestants.

CHARLES X., King of France: 1757, Oct. 9—1836, Nov. 6 (reigned 1824–30); b. Versailles; third son of the Dauphin Louis, and grandson of Louis XV. He received the title of Count d'Artois, and in 1773 married Maria Theresa of Savoy. After the events of 1789, July 14, he and the prince of Condé took the lead in the emigration. In 1796, he sailed from England with a squadron under Commodore Warren, on an expedition to the w. coasts of France, whereupon 20 departments rose in insurrection; but he had not courage to land and place himself at the head of the insurgents, whom he basely left to the vengeance of the republicans. Detested now by the royalists of France, and despised by the British, he lived in obscurity until the allies entered Paris, 1814, when he appeared in France as lieut.-gen. of the kingdom, and issued a proclamation announcing the end of despotism, of conscriptions, and of oppressive taxes. After the second restoration he took little open part in politics, but lived surrounded with priests, Jesuits, and nobles of the old school; and in this circle originated the tyrannical and unconstitutional measures to which even Louis XVIII. made considerable opposition, but which at this time disgraced the government of France. The death of Louis, 1824, Sep. 16, brought C. to the throne. He took the oath of adherence to the charter but soon showed his intention of restoring as much as possible the absolutism of the old French monarchy. Popular discontent rapidly increased. A royal speech, of a threatening character, 1830, Mar. 2, was followed by an address of remonstrance, signed by 221 deputies, upon which the king dissolved the chambers. All the deputies who signed the address were re-elected, but the court, taking fresh courage from the success of the expedition to Algiers, the celebrated ordinances of July 25 were signed by the king, putting an end to the freedom of the press, already largely curtailed, appointing a new mode of election, and dissolving the recently-elected chamber. The capital took up arms, the guards refused to act, and the king soon found himself compelled to flee. As a last resource he abdicated the throne, 1830, Aug. 2, in favor of his grandson, Henry, Duke of Bordeaux; the dauphin also consenting to this act. But it was too late; the revolution was accomplished, and Louis Philippe, Duke of Orleans, was chosen king of the French. C. made his escape to England, resided for some time at Holyrood, and afterward at Prague. He took no part in the political intrigues and attempts of the Duchess de Berri. He died of cholera at Görz. His only surviving dessendant, in the male line, is his grandson, the Count of Chambord (q.v.).

CHARLES I., Emperor: see CHARLEMAGNE.

CHARLES II., Emperor: see CHARLES I., of France.

CHARLES III., Emperor: see CHARLES II., of France.

CHARLES IV., Emperor of the Romans: 1316–1378, Nov. 29 (reigned 1346–78); b. Prague; son of King John of Bohemia, of the house of Luxembourg, who fell in the battle of Crecy. At the instigation of Pope Clement VI., to whom he had previously taken an oath of humiliating submission at Avignon, he was elected emperor by a portion of the electors 1346, July 11, though Louis IV. then actually filled the imperial throne. But even after the death of Louis, it was not without difficulty that he obtained secure possession of it. He was crowned king of Italy at Milan 1354, and emperor at Rome 1355. In 1356, he issued the golden bull (q.v.), the fundamental law concerning the election of German emperors, in defiance of the very letter of which he afterward, by large bribes, secured for his own son, Wenceslaus, the succession to the empire. He died at Prague. C. was an artful politician but destitute of true greatness. He sought the support of the clergy by undue concessions, sold rights and privileges in Italy and other parts of the empire for money, and cared chiefly for the prosperity of his hereditary kingdom of Bohemia.

CHARLES V., Emperor of the Romans: 1500, Feb. 24—1558, Sep. 21; b. Ghent; eldest son of Philip, Archduke of Austria, and of Joanna, daughter of Ferdinand and Isabella of Spain. Philip's father was the Emperor Maximilian, and his mother was Maria, daughter and heiress of Charles the Bold, Duke of Burgundy. On the death of his grandfather, Ferdinand, 1516, C. took possession of the throne of Spain by the title of Charles I., his mother Joanna being of disordered intellect and incapable of reigning. He was not, however, very favorably received by the Spanish nobles, who were doubtful of his right, and jealous of the followers whom he brought from the Low Countries, where he had been educated. All the abilities of his famous minister Ximenes (q. v.) were requisite to prevent an open revolt. On the death of Maximilian, 1519, C. was elected German emperor from among a number of competitors, chiefly through the influence of the Elector Frederic of Saxony. In his earlier years he had been frivolous and dissolute, but he now became mindful of the duties and dignity of his high position. 1520, Oct. 22, he was crowned at Aix-la-Chapelle, and received from the pope the title of Roman emperor. He ascended the imperial throne at a time when Germany was in a state of unprecedented agitation concerning the doctrines proclaimed by Luther. To restore tranquillity, a great diet was held at Worms, 1521, in whose presence Luther's declaration of his principles forms a well-known epoch in the history of the reformation. In 1522 he reduced to subjection the towns of Castile, which had leagued themselves together for the maintenance of their ancient liberties. He was likewise successful in his war against the Turks under Solyman the Great. C. was involved also in a struggle of long duration with France, in which, after many alternations of fortune, his armies at last drove the French from the greater part of their conquests in Italy; and Francis I. of France fell into his hands as a

prisoner, after a battle by which the siege of Pavia was raised, 1525, Feb. 24.

The pope, however, began to grow alarmed at his victories, and therefore allied himself with France and the principal Italian states, and released the king of France from the obligations under which he had come by his treaty with Charles. It was the pope's object to exclude C. from all dominion in Italy; but the emperor's forces under Charles of Bourbon, the former Constable of France, took Rome itself by storm, plundered it, and made the pope prisoner. C. pretended great regret for this, went into mourning with all his court, and caused prayers to be said for the pope's liberation, while by his own directions the pope was kept for seven months a captive. Peace was concluded, 1529, on terms most favorable for the emperor. He now thought to put an end to the religious differences in Germany, and to repel the Turks, who had overrun Hungary and laid siege to Vienna. But the Diet at Augsburg, 1530, proved how vain was the hope of restoring the former state of things in Germany; and the emperor refusing to recognize the confession of the Protestants, they refused to help him against the Turks. In 1531, the Protestant princes formed the League of Smalcald (q. v.), and allied themselves with France and England for their own protection. This, and the continued assaults of the Turks, compelled the emperor to yield in some measure to the demands of the Protestants. In 1535, C. undertook an expedition from Spain against the pirate Barbarossa, who had established himself in Tunis, and whose vessels did prodigious injury to the commerce of Spain and Italy. In this expedition he was completely successful, and set free no fewer than 22,000 Christians, who had been held as slaves. War again broke out with France; an armistice for ten years was concluded, 1538; and C. even visited Paris, where he was magnificently entertained. But the war broke out afresh 1542, and terminated in favor of the emperor; who also triumphed in the battle of Mühlberg, 1547, Apr. 25, over the Prot. princes of Germany, and deprived the Elector John Frederic of Saxony of his territories. But he showed so plainly his intention of converting the German empire into a hereditary possession of his family, that new opposition arose, and C. was compelled to flee before the arms of Duke Maurice of Saxony and the Protestants, and in 1552 to promise them the peaceful exercise of their religion, which was confirmed by the Diet at Augsburg, 1555. Henry II. of France also took from C. some parts of Lorraine. His health failing, C. now declared, in an assembly of the states at Louvaine, his resolution to seek repose, and devote the remainder of his days to God. He resigned the government of his dominions to his son, for whom, however, he vainly sought to secure the imperial throne; and having relinquished to him the crown of Spain, 1556, Jan. 15, he retired to the monastery of Yuste, in Estremadura, where he spent two years partly in mechanical amusements, partly in religious exercises, which are said to have assumed a character of the most gloomy asceticism, and in this mon

astery he died. By his wife Isabella, daughter of King Emmanuel of Portugal, he had one son, his successor, Philip II. of Spain, and two daughters. His brother Ferdinand succeeded him in the empire.

CHARLES VI., German Emperor; the last of the proper male line of the House of Hapsburg: 1685—1740, Oct. 20 (reigned 1711–40); second son of the Emperor Leopold I. His father intended for him the crown of Spain; but Charles II. of Spain, yielding to French intrigues, assigned it by testament to Philip of Anjou, whereupon arose the great war of the Spanish succession—Britain and Holland taking part with the emperor against France, for the maintenance of the balance of power in Europe. C. was acknowledged by the allies as Charles III. of Spain, but had not succeeded in obtaining permanent possession of the kingdom, when the death of his brother, the Emperor Joseph I., recalled him to Germany, 1711; and as he now became emperor of Germany, Britain and Holland concluded the peace of Utrecht with France, 1713. C. continued the war for some time longer; but was at last compelled to give up his claim to Spain, being confirmed, however, in possession of the Spanish Netherlands and of the Spanish possessions in Italy. Success attended his arms in a war against the Turks, and in a war with Spain, which arose out of the projects of the Spanish minister Alberoni, and in which the *Quadruple Alliance* was formed—France, Britain, and Holland joining the emperor against Spain. But C., having lost his only son, and being very anxious to secure the throne to his own descendants, named his daughter, Maria Theresa (q.v.), as his heiress, by a *pragmatic sanction* (q.v.), to which he had much difficulty in obtaining the consent of some of the German states and some foreign powers; and to accomplish this object he gave up Tuscany, Parma, and Piacenza, and afterward Naples, Sicily, Lorraine, and parts of Milan. Meanwhile, he was unsuccessful in wars with France and Spain, and with the Turks, who compelled him, 1739, to resign his former conquests. He was of a mild and benevolent disposition, but full of superstition and of prejudices in favor of feudalism and ecclesiastical domination.

CHARLES VII., German Emperor: 1697–1745, Jan. 20 (reigned 1742–45); b. Brussels; son of Maximillian Emmanuel, Elector of Bavaria and for some time governor of the Spanish Netherlands. After the conquest of the Bavarian territories, and the pronunciation of the ban of the empire against his father by the Emperor Joseph I., he was for a time the emperor's prisoner; but after the decease of Joseph, he married his youngest daughter; and having, 1726, succeeded his father as Elector of Bavaria, refused his consent to the Pragmatic Sanction (see Charles VI., German emperor); and on the death of Charles VI., 1740, advanced a claim to the Austrian dominions in right of his wife, and upon the further ground of a testament of Ferdinand I. Success at first attended his arms; he was acknowledged as Archduke of Austria, and then as king

of Bohemia, upon which he was also, 1742, elected emperor. But the tide of fortune now turned against him. The Hungarians rose in favor of Maria Theresa, and he was driven from Austria and from Bohemia, and for a time even from his Bavarian capital, Munich. Disease and calamities combined to cause has death, shortly before which he said, 'Misfortune will never leave me, till I leave it.'

CHARLES I., King of Spain: see CHARLES V., Emperor.

CHARLES II., King of Spain: 1661–1700 (reigned 1665–1700); son of Philip IV. During his infancy, the queen, Anna Maria of Austria, who was regent, warred unsuccessfully with Fance and lost Sicily. C. assumed the government, 1675, and took for his chief adviser Don John, bastard son of the late king, who died 1679. By the treaty of Nimeguen, 1678, C. ceded Franche-Comté and several Dutch towns to France. His marriage to Louisa of Orleans, niece of Louis XIV., secured peace for eleven years: after her death he married Anne, sister of the emperor Leopold I., whom he joined in declaring war against France, 1694. The French troops had reached Barcelona when he concluded the treaty of Ryswick, 1697. Being childless, his last years were occupied with negotiations concerning the succession. He inclined to Austria, but under the pope's influence left the crown a month before his death to Philip of Bourbon, grandson of Louis XIV.

CHARLES III., King of Spain: 1716–88 (reigned 1759–88); second son of Philip V., and great-grandson of Louis XIV. of France. At fifteen he was supplied with an army and sent to rule Tuscany, Parma, and Piacenza as a Spanish principality. He conquered the two Sicilies, 1734, and was recognized as king thereof by the emperor. Succeeding his brother, 1759, he began a beneficent reign. A man of strong and liberal mind, and served by able ministers, he reformed the finances, founded a bank at Madrid, banished the Jesuits, developed commerce, science, and art, strengthened the army and navy, and attempted to repress piracy, brigandage, and the Inquisition. He ceded Florida to England in exchange for Cuba, and received it back from the United States, which he had assisted in the revolutionary war. His attack on Gibraltar was unsuccessful, and he gained little by the war with England. His reign has been described by Beccatini and Roy, and his character eulogized by Cabarrus. Buckle, in his *History of Civilization*, bore tribute to the enlarged and useful policy of this monarch, whose humorous features were long familiar to Americans on his silver coinage. He died at Madrid.

CHARLES IV., King of Spain: 1748–1819 (reigned 1788–1808); son of Charles III. He was governed by his queen and cousin, Maria Louisa of Parma, and in large measure by Manuel Godoy, a guardsman who rose from the ranks to be lieut.gen., duke of Alcudia, and minister of foreign affairs. After C. had vainly attempted to aid Louis XVI., Godoy made a treaty with the French republic at Basel,

1795, and soon afterward concluded an offensive and defensive alliance. During a war with England, the Spanish fleet was destroyed by Nelson at Trafalgar, 1805. C. made a secret and curious treaty with Napoleon, 1807, by which 16,000 Spanish troops were sent to help the French in Denmark, while Portugal was to be divided between Godoy and the queen of Etruria, and C. was to be called emperor of America. At this time Napoleon was intriguing with Ferdinand, C.'s son and heir, who was soon detected in a plot against the king's life, and who continued his conspiracies after being pardoned. Alarmed by disturbances in Madrid, C. abdicated, 1808, in Ferdinand's favor. He presently sought to nullify this action, but gave up the crown to Napoleon, receiving a pension of 6,000,000 francs and the castle of Chambord. He might afterward have regained the throne, but declined to do so, preferring to live in sumptuous retirement with his wife and Godoy. He died in Rome.

CHARLES IX., King of Sweden: 1550–1611 (reigned 1604–11); fourth son of Gustavus Vasa. He attained the regency pending negotiations with his nephew Sigismund, King of Poland, who inherited the Swedish crown, 1592, and who, as a Rom. Cath., was required to sign a decree establishing Lutheranism in Sweden. On Sigismund's deposition, 1604, C. was elected king. He warred with Poland, Russia, and Denmark, and at the age of 60 challenged the Danish king, Christian IV., to single combat. He framed a new code of laws, advanced education, and founded the Univ. of Gothenburg. He wrote a rhymed chronicle of his Polish war, and some letters, translated into German and pub. at Amsterdam, 1608.

CHARLES X., or Charles-Gustavus, King of Sweden: 1622, Nov. 8—1660, Feb. 23 (reigned 1654–60); b. Nyköping. After studying at the univ. of Upsala, he travelled through France, Germany, and Switzerland, joined the army of Torstensohn (q.v.), 1642, fought at the battles of Yankovitz and Leipzig, and at the close of the war was the representative of Queen Christina at the conferences for giving effect to the treaty of Westphalia. On the abdication of Christina, Charles-Gustavus, who was the son of Gustavus Adolphus's eldest sister, Catharine, and John Casimir the Palatin of Zweybruck in Clerburg, succeeded as next heir, 1654, June 17, to the throne of a kingdom which, after his accession, he discovered to be almost bankrupt. There was a debt of 10,000,000 crowns, while the revenue did not amount to 800,000 crowns, out of which one-fourth was granted as a pension to the ex-queen, whose carelessness and extravagance had brought about this deplorable state of matters, and who, in the words of the aged chancellor Oxenstierna, 'had cost Sweden dearer than ever an enemy did.' She had taken away everything belonging to the royal residences which was portable; and C. was forced at first to borrow even a set of kitchen utensils. C. was the second of the three great warrior-monarchs of Sweden, but unlike his uncle, who could plead

religious grounds, and his grandson, who was at first forced to fight for self-preservation, C. seemed to make war principally for war's sake. First he attacked Poland, 1655, July, because the Polish monarchs had not resigned their claim to the Swedish throne; captured in the same year Warsaw, Cracow, Thorn, Elbing, Posen, and Kalicz; and drove the king to take shelter in Silesia: he then assailed the Danes, who had declared war against him, crossed the Belts on the ice, and speedily made himself master of all the continental possessions of Denmark. Next marching from isle to isle over the frozen sea, he ultimately, by menacing Copenhagen, compelled the treaty of Roskild (1658, Mar. 7), which gave to Sweden, Holland, Scania, Bleckingen, Bornholm, and the other Danish possessions beyond the Sound, and emancipated Sweden from the Sound Dues. Charles, however, still cherished enmity against the Danes; and after fruitlessly proposing to the Dutch and English a partition of Denmark, he invaded Zeeland, and attacked Copenhagen, 1659. The capital, however, defended itself valiantly, aided by succor from the Prussians and Dutch; and the Swedish monarch was compelled to abandon the siege. Soon afterward, while laboring to effect a complete reconciliation with Poland in order to be free to attack the Danes in Norway, he died suddenly at Gothenburg.

CHARLES XI., King of Sweden: 1655, Nov. 24—1697, Apr. 15 (reigned 1672–97); son of King Charles (X.) Gustavus. While he was little more than four years old at his father's death, the government was committed to his mother Hedwig, as regent, and a council. The peace of Oliva (1660, May 3) with Poland, by which Sweden obtained Esthonia, part of Livonia, and Oesel, and the Polish monarch renounced all pretensions to the Swedish crown; and that of Copenhagen (1660, June 6), generally confirmatory of the treaty of Roskild with Denmark, were the first important acts of the government. A treaty with Russia on the basis of the *status quo* followed in 1661; and from this period till 1672 the kingdom was free from foreign wars. In 1672 Dec., C. (whose education had been so ill attended to that he had reached manhood before he could read) took the reigns of government, and, by the allurements of France, was induced to make war on Brandenburg. This unprovoked attack was disastrous to the Swedes, for they suffered a severe defeat from the elector at Fehrbellin (1675); and though C. revenged himself by defeating the Danes (who were allied with Prussia) at Halmstadt, Lemd, and Landskrona, his fleet was defeated by the Dutch near Oeland, and again by the Danes at Bleking and Kiöge; and many of Sweden's recent acquisitions were wrested from her. These, however, were restored by the peace of Saint-Germain-en-Laye (1679, Sept. 17), which closed this needless and unfortunate contest. In 1680, a struggle commenced between the crown, supported by the burghers and peasants on one hand, and the nobles on the other; and a considerable diminution of the power of the nobles was the consequence. The resumption

of all the crown lands which had been alienated since 1609 was a fatal blow to the preponderating power of the nobles; and by a voluntary declaration of the states, 1682, Dec. 9, the king was invested with absolute authority. This voluntary erection of a despotism by the people, a thing of rare occurrence in the world's history, is yet more extraordinary at the close of the 17th c.; and it speaks highly for C. that he never employed his unlimited authority otherwise than for the best interests of his kingdom. By a judicious administration of the revenues, he was enabled to extinguish the public debt (1686), reorganize the fleet and army, and by 1693 to dispense with the calling up of extraordinary subsidies. Though absolute, he never imposed a tax but with consent of the states; and he every year published a detailed account of revenue and expenditure. In 1693, he was formally declared absolute by an act of the diet. The foreign policy of the country also was conducted in a manner equally satisfactory and effective. Deux-Ponts fell to him as heir to his cousin Friedrich-Ludwig, the last palatine, 1681; the attempts of the Danes upon Holstein were rigorously repressed, and many small outlying territories were brought under his sway. His anxiety for his subjects' welfare was particularly shown by commercial and maritime regulations superior to any then in Europe; and by his numerous journeys to all parts of his dominions to examine for himself into the remote details of the administration. A codification of the laws was commenced, but was unfinished when he died at Stockholm.

CHARLES XII., King of Sweden: 1682, June 27—1718, Nov. 30 (reigned 1697–1718); b. Stockholm; son of Charles XI. On the death of his father, 1697, he ascended the throne, and notwithstanding his youth, the states declared him of age to assume the reins of government. The neighboring powers thought this a favorable time to humble Sweden, then the great power of the north, and Frederick IV. of Denmark, Augustus II. of Poland, and the Czar Peter I. concluded a league for this object. The Danes began by invading the territory of the Duke of Holstein Gottorp, who had married C.'s eldest sister, and who applied to him for assistance. The young king immediately resolved on the most active measures, and approached Copenhagen with such a force as presently compelled the Danes to make peace. C. now hastened to meet the Russians; and although they lay in an intrenched camp beneath the walls of Narva, 50,000 strong, he stormed their camp 1700, Nov. 30, with 8,000 Swedes, and defeated them with great slaughter. He next dethroned Augustus II., and procured the election of Stanislaus Leszczynski as king of Poland. Augustus supposed himself safe at least in Saxony, his hereditary dominion, but was followed thither, and humbling terms of peace were dictated at Altranstädt in 1706. C. obtained from the emperor liberty of conscience for the Protestants of Silesia. Leaving Saxony with an army of 43,000 men, 1707, Sep., he proposed to advance direct upon Moscow: but at Smolensk he was

induced, by the representations of the Cossack *hetman*, Mazeppa, to change his plan and proceed to the Ukraine, in hope of being joined by the Cossacks. In this hope, however, he was disappointed, and after enduring many hardships, he was defeated by the Russians at Pultowa, 1709, June 27, and fled to Bender in the Turkish dominions.

Augustus II. now revoked the treaty of Altranstädt, and the czar and the king of Denmark assailed the Swedish territories. But the regency in Stockholm adopted measures of effective and successful resistance, and C. prevailed with the Porte to declare war against Russia, in which Peter seemed at first likely to suffer a severe defeat. But Russian agents succeeded in inspiring the Turks with suspicions concerning the ultimate designs of C., who was conveyed to Adrianople, but after some time escaped and made his way through Hungary and Germany, pressing on by day and night with extraordinary speed till he reached Stralsund, where he was received with great joy, 1714, Nov. 11 (22). He was soon, however, deprived of Stralsund by the allied Danes, Saxons, Prussians, and Russians. After he had adopted measures for the security of the Swedish coasts, his passion for war led him to attack Norway. Success appeared again to attend his arms, when, in the siege of Friederichshald, 1718, Nov. 30, he was killed by a musket-bullet. On his death, Sweden—exhausted by his wars—ceased to be numbered among the great powers. He was a man capable of comprehensive designs, and of great energy in persecuting them. His abilities appeared not only in military affairs, but in his schemes for the promotion of trade and manufactures. His self-willed obstinacy, however, amounted almost to insanity; in fact he has been termed 'a brilliant madman.' His habits were exceedingly simple; in eating and drinking he was abstemious, and in the camp he sought no luxuries beyond the fare of the common soldier.

CHARLES XIII., King of Sweden: 1748, Oct. 7—1818, Feb. 5 (reigned 1809–18); second son of King Adolphus Frederick, and of the sister of Frederick the Great, of Prussia. He was trained for naval command, and was long the high admiral of Sweden, in which capacity he distinguished himself by a great victory over the Russians in the Gulf of Finland 1788, and by bringing back his fleet safe to Carlscrona in the most perilous season of the year. He was on several very important occasions called to an active part in political affairs—in the revolution of 1772, when he was made gov.gen. of Stockholm and Duke of Södermanland; after the assassination of his brother Gustavus III., 1792, when he was placed at the head of the regency; and after the revolution of 1809, when he became administrator of the kingdom, and subsequently king. The Swedish monarchy now became limited instead of despotic. Having no child C. concurred with the states of the kingdom in choosing as his successor the French general, Bernadotte, who became crown-prince of Sweden, and ascended the throne on the death of C. The prudence

of the king and crown-prince secured the union of Norway with Sweden 1814, as a compensation for Finland.

CHARLES XIV., King of Sweden and Norway (originally Jean Baptiste Jules Bernadotte): 1764, Jan. 26 —1844, Mar. 8 (reigned 1818–44); b. Pau, in the south of France; son of a lawyer. He entered the French army as a common soldier; became an ardent partisan of the revolution; greatly distinguished himself in the wars of Napoleon, and soon attained the highest military rank. But he was distrusted by Bonaparte, whose ambitious schemes he took no part in promoting; and Napoleon having taken offense at his conduct after the battle of Wagram, Bernadotte left the army in disgust, and returned to Paris. He was afterward sent by the ministerial council to oppose the British, who had landed at Walcheren, but the breach between the emperor and him grew wider. In 1810, he was elected crown-prince and heir to the throne of Sweden. Almost the only condition imposed on him was that of joining the Prot. church. He changed his name to Charles John; and the health of the Swedish king, Charles XIII., failing in the following year the reins of government came almost entirely into his hands. He refused to comply with the demands of Napoleon, which were opposed to the interests of Sweden, particularly as to trade with Britain, and was soon involved in war with him. He commanded the army of the allies in the n. of Germany, and defeated Oudinot at Grossbeeren, and Ney at Dennewitz. He showed great reluctance, however, to join in the invasion of France, and was tardy in his progress southward.—He became king of Sweden on the death of Charles XIII., 1818, Feb. 5, and won for himself the character of a wise and good king. Education, agriculture, manufactures, commerce, and great public works, as well as the military strength of the kingdom, were promoted by his care. He was succeeded by his son Oscar.

CHARLES XV., King of Sweden and Norway: 1826–1872, Sep. 18 (reigned 1859–72); son of Oscar I., and grandson of Charles XIV. He married 1850, Louisa, dau. of the King of the Netherlands; their daughter married Prince Frederick of Denmark. C. was an amiable man of literary and artistic tastes; his poems were translated into German and pub. at Berlin 1866. His reign was constitutional and popular; during it the Storthing was reformed so as to consist of two chambers, elected respectively by the provincial representatives and by the people.

CHARLES II., the Bad, King of Navarre and Count of Evreux: 1332–87 (reigned 1349–87); grandson of Louis Hutin. His claim to the throne of France was better than that of Edward III. of England, and inferior only by the Salic law to that of John II. C. began with an assassination, was imprisoned 1356, was released during the king's exile in England and made captain-general by the Parisians, but soon deposed. He ranged and wasted the land with banditti, made peace with King John 1360, but won no favor from Charles V., who succeeded 1364. Accused

of all manner of treasons, and attacked by the King of Castile, the Duke of Anjou, and Duguesclin, he had to yield 20 towns or castles to regain the rest. The accounts of his death vary widely; the popular tradition attests the low estimate of his character.

CHARLES IV, King of Navarre: 1421–61 (reigned 1451–61); son of John of Aragon and Blanche, heiress of Charles III. of Navarre. Inheriting this throne on his mother's death he was kept from it by his father, who married Jeanne of Castile. This princess insulted and persecuted her step-son, and finally had him poisoned. He was a man fit for better times, but forced to struggle for dignities that he did not greatly value; thus warring, he gained much of his heritage, was owned as King of Barcelona, and reconciled to his father. C. had unusual learning for his time: he translated Aristotle's *Ethics*, wrote a chronicle of the kings of his mother's line, and some poetry.

CHARLES, Count of Anjou and Provence, King of Naples and Sicily: see NAPLES: KONRADIN: MANFRED: SICILIAN VESPERS.

CHARLES ALBERT, King of Sardinia: 1798, Oct. 2—1849, July 28 (reigned 1831–49); son of Prince Charles Emmanuel of Savoy-Carignan, and in 1800 succeeded to his father's title and estates in France and Piedmont. In 1817, he married Maria Theresa, daughter of the Archduke Ferdinand of Tuscany. When the revolutionary movement took place in Piedmont 1821, he was made regent, upon the abdication of Victor Emmanuel, until Charles Felix, brother of the late king, should arrive to assume the sovereignty. He displeased both the liberal party and their opponents, and Charles Felix disallowed all his acts, and for some time forbade his appearance at court. In 1829, he was appointed viceroy of Sardinia. On the death of Charles Felix, 1831, Apr. 27, he ascended the throne. The liberals had great expectations from him, but were for a long time disappointed; his government much resembled the other Jesuitic and despotic Italian governments, except that he sought to promote the interests of the country, and to restrict the influence of the clergy in political affairs. It was not till after the elevation of Pius IX. to the popedom, when a new impulse was given to the cause of reform, that the Sardinian government adopted the constitutional and liberal policy to which it has since adhered. C. A. entered warmly into the project of Italian unity, and evidently expected to place himself at the head of the whole movement and of the new kingdom of Italy. When the Lombards and Venetians rose against the Austrian government, he declared war against Austria, 1848, Mar. 23, and at first was exceedingly successful, but was insufficiently supported by the Lombards, and finally defeated by the Austrians, so that after the fatal battle of Novara, 1849, Mar. 23, he was obliged, for the preservation of the integrity of his kingdom, to resign the crown

in favor of his son, Victor Emmanuel. He afterward retired to Portugal, and died at Oporto.

CHARLES AUGUSTUS, Grand Duke of Saxe-Weimar: 1757–1828 (reigned 1775–1828). He is noted for his love of letters and friendship for Goethe, which began in boyhood; Wieland was among his tutors. He was in the Prussian army 1776–1806, but after Jena he joined the Confederacy of the Rhine and aided Napoleon. He turned again 1813, and took command of an army of the Allies; the congress of Vienna enlarged his dominions and advanced them to a grand duchy. The presence of Goethe, Schiller, Herder, etc., at Weimar made his court and name illustrious. His correspondence with Goethe appeared at Leipsic 1863.

CHARLES THE BOLD, Duke of Burgundy: 1435, Nov. 10—1477, Jan. 5 (ruled 1467–77); b. Dijon; son of Philip the Good, of the House of Valois, and of Isabella of Portugal. He bore, during his father's life, the title of Count of Charolais. He was of a fiery, ambitious, and violent disposition. From an early period to the end of his life he was a declared enemy of Louis XI. of France, the nominal feudal superior of Burgundy. Louis having caused Philip to deliver up some towns on the Somme C. left his father's court and formed an alliance with the Duke of Bretagne and some of the great nobles of France for the maintenance of feudal rights against the crown. Their forces ravaged Picardy and Isle-de-France; they threatened Paris, and defeated the king at Montlhéry. The result was a treaty by which the Count of Charolais obtained the towns on the Somme and the counties of Boulogne, Guines, and Ponthieu for himself. In 1467, he succeeded his father as Duke of Burgundy. Richer and more powerful than any prince of that time he conceived the design of restoring the old kingdom of Burgundy, and for this purpose of conquering Lorraine, Provence, Dauphiny, and Switzerland. While he was making preparations for war, Louis invited him to a conference; he hesitated, and Louis by his agents stirred up the citizens of Liege to revolt. Meanwhile C. consented to the conference, and, the news coming of what had taken place at Liege, he seized the king, and if he had not been withheld by his councillor Comines would have put him to death. He compelled Louis, however, to accompany him to Liege, and apparently to sanction the cruelties which he inflicted on the citizens. War raged between them afterward with little intermission, till 1475. In 1475, Sep , C. found leisure to attempt the prosecution of his favorite scheme of conquest, and soon made himself master of Lorraine. In the following year he invaded Switzerland, stormed Grandson, and hanged and drowned the garrison; but was soon afterward terribly defeated by the Swiss near that place, and lost his baggage and much treasure. Three months later he appeared again in Switzerland with a new army of 60,000 men, and laid siege to Morat, where he sustained, 1476, June 22, another and more terrible defeat. After this he sank into despondency and let his nails and beard

grow. But the news that the young Duke René of Lorraine was attempting to recover his territories roused him, and laid seige to Nancy. His army was small; Italian auxiliaries, whom he had hired, went over to the enemy; and in the battle which he too rashly fought he lost his life. His daughter and heiress, Maria, married the Emperor Maximilian I. With his life ended the long, successful resistance of the great French vassals to the central power of the monarchy.

CHARLES, or CHARLES LOUIS, Archduke of Austria: 1771, Sep. 5—1847, Apr. 30; b. Florence, Italy; third son of Emperor Leopold II. While yet a youth, he pursued military studies with much ardor; and after having greatly distinguished himself as a general in inferior commands, he was intrusted, 1796, with the chief command of the Austrian army on the Rhine. He fought with great success against Moreau at Rastadt, defeated Jourdan in several battles, drove the French over the Rhine, and concluded his victories by taking Kehl in the winter. In 1799, he was again at the head of the army on the Rhine, was several times victorious over Jourdan, protected Swabia, and successfully opposed Massena. In 1800, illness compelled him to retire from active service; but being appointed gov.-gen. of Bohemia, he formed a new army there. After the battle of Hohenlinden, he was again called to the chief command, and succeeded in staying the rapid progress of Moreau, but almost immediately entered into an armistice with him, followed by the peace of Luneville. In 1805, he commanded the army opposed to Massena in Italy, and fought the hard battle of Caldiero; but upon bad tidings from Germany, retreated from the left bank of the Adige to Croatia. This retreat was one of his greatest military achievements. In 1809, he won the great battle of Aspern, which first showed Europe that Napoleon was not invincible; but he did not promptly enough follow up his victory, and Napoleon, who hastened to reinforce his army, retrieved his fortunes at Wagram, and the archduke was now compelled to give way before the enemy, till he reached Znaim, where an armistice was concluded, July 12. In the campaigns of 1813–14 he had no part; and lived in retirement till his death.

CHARLES EDWARD (called the 'Younger Pretender'): see STUART, CHARLES EDWARD LOUIS PHILIP CASIMIR.

CHARLES EMMANUEL I., Duke of Savoy (called the Great): 1562, Jan. 12—1630, July 26 (ruled 1580–1630); b. at the castle of Rivoli, and succeeded his father, Emmanuel Philibert, 1580. He married a daughter of Philip II. of Spain, and at first allied himself politically with Spain, and made war against France for the marquisate of Saluzzo (or Saluces), which he obtained, 1601, on the cession of some other territories to France. But he afterward joined France and Venice to oppose the preponderant power of Spain in Italy; then allied himself with the house of Hapsburg, and set up a claim to Montferrat, but suffered

in consequence the direst calamities, great part of his dominions being conquered by the French, and in their hands when he died. He was a prince of vast ambition, and for whom no enterprise was too bold.

CHARLES, surnamed MARTEL—i.e., the Hammer, ruler of the Franks: abt. 690–741, Oct. 22; son of Pepin of Heristal, mayor of the palace under the last Merovingian kings. After his father's death, 714, he was proclaimed mayor of the palace by the Austrasian party. King Chilperic and he now quarrelled, and a civil war arose which ended in Charles becoming undisputed mayor of the palace and ruler of the Franks. During the latter years of his life, he indeed allowed the nominal throne to remain occupied—the titular kings being mere puppets in his hands. He was much engaged in wars against the revolted Alemanni and Bavarians, the Saxons, etc., but his importance as a historic personage is due chiefly to his wars against the Saracens, who, having conquered Septimania from the western Goths, 720, advanced thence into Aquitaine, conquered Bordeaux, defeated the Duke of Aquitaine, crossed the Garonne, advanced to the Loire, and threatened Tours. Charles defeated them between Tours and Poitiers, 732, in a great battle, in which their leader, Abd-ur Rahmân, fell, and a stop was put to their progress in Europe, which had filled all Christendom with alarm. He defeated them again, 738, when they had advanced in the Burgundian territories as far as Lyon; deprived them of Languedoc, which he added to the kingdom of the Franks, and left them nothing of their possessions n. of the Pyrenees beyond the river Aude. He died at Quiercy on the Oise, in the midst of his victories, his projects, and his greatness, leaving the government of the kingdom to be divided between his two sons—Carloman and Pepin the Short.

CHARLES RIVER: rises in Worcester co., Mass., and flows e., then n.w., then e., through Norfolk and Middlesex cos., into Boston Harbor, separating Cambridge from Boston. It supplies water-power to many mills and factories, and a number of villages are on its banks. It is about 75 m. long, and navigable 7 m. to Watertown. The Harvard boat-clubs use its lower portion for training. Mr. Longfellow so highly valued the view of this placid stream that he kept possession of a meadow along its bank opposite his house in Cambridge to prevent its being built upon.

CHARLESTON, S. C., the chief city of the State, and largest on the Atlantic seaboard south of Chesapeake Bay, seat of Charleston County; on the Atlantic C. L. and Southern R.R. (Charleston & S. and South C. & Georgia) systems; 130 miles southeast of Columbia, the capital, and 82 miles north of Savannah.

Charleston lies on a peninsula, 10 or 12 miles long and 8 or 10 feet above high water, between the navigable Ashley and Cooper rivers, 2,100 yards and 1,400 yards wide respectively at the mouth; the latter reinforced by the Wando at the city, and the estuary of the three

forming a magnificent landlocked harbor, six miles long by three wide, with 40 feet of water at the city,—one of the finest on the Atlantic coast.

The government jetties have scoured a channel across the bar to a mean depth already of 26 feet at low water, or 31 feet at mean high tide, which it is believed will be soon increased by several feet. There are about nine miles of available water front, most of the wharfage being on the Cooper, which is navigable 30 miles to the canal connecting it with the Santee, and so with the west and northwest of the state. Ocean traffic has been quick to follow the favorable new channel opened for it; besides the Clyde Line of steamships, which taps the Atlantic ports from Boston to Jacksonville, and includes Charleston, two ocean freight lines, in 1901, established terminal docks at the city, one to the West Indies and Central America. The government naval station has been moved to Charleston, where a tract on the Cooper River about seven miles from the city has been bought; the plans contemplate an outlay of $8,000,000 to $10,000,000. The harbor is defended by the historic Fort Moultrie, at Sullivan's Island on the eastern side, which the government is improving into one of the best equipped defenses on the coast at a cost of some $500,000; by Fort Sumter, on a small island in the centre; and batteries Sergeant Jasper (from a Revolutionary hero) and Capron. Fort Wagner, Fort Ripley, and Castle Pinckney, once celebrated, are now abandoned.

*Trade and Commerce.*—The Civil War nearly ruined Charleston's commerce, which consisted mainly in exports of cotton (it stood third in the United States, next to New York and New Orleans), rice, and naval stores, to the amount of some $17,000,000 at the time of the War. The silting up of docks, decay of wharves, and destruction of railroads, were repaired slowly, and the commerce which had found new outlets was reclaimed; the total in 1905 being but $3,358,725, consisting of cotton, cotton goods, rice, naval stores, and turpentine casks, lumber, phosphate fertilizers, fruits and vegetables. Charleston has a very valuable staple in the Sea Island cotton, with its long fibre, which grows in most perfection on the islands near the city; the raising of fruits and early vegetables for Northern markets also relies on Charleston's shipping facilities.

*Manufactures.*—The great manufacture of Charleston is fertilizers, from the inexhaustible beds of phosphate rock in the vicinity, discovered by Dr. St. Julien Ravenel some time after the War; out of a total manufactured product valued at $9,562,387 in 1900, $3,967,090 was of phosphates, none other amounting to $500,000. Of the other industries, besides domestic and jobbing ones, like food, clothing, plumbing, etc., the chief were of tobacco products, foundry and machine-shop work, cotton compressing, and oil and rice milling, bagging factories, cigar factories; making baskets to ship fruit and vegetables in.

and casks for turpentine; ice, soap, beer, and mineral waters.

*Interior, Buildings, Suburbs, etc.*—Charleston is laid out generally at right angles, but with some picturesque irregularities in the streets; four of these, King Street, the principal retail thoroughfare; Meeting Street; and Rutledge and Ashley avenues, run the entire length of the city, north and south. King Street ends in White Point Garden; east of this is the Battery, a broad esplanade 1,500 feet long, affording a noble view of the harbor and the forts. At the junction of Broad and Meeting streets are grouped the public buildings, consisting of the court-house, a solid brick building; the city hall, containing an historical museum with valuable relics; and the new post-office, a magnificent four-story building of Carolina granite, with a tower and all modern appliances, costing about $500,000. The United States custom-house, near Market wharf on the Cooper River, is a superb structure of white marble, costing some $3,000,000. In front of the city hall is Washington Park, containing two handsome fountains and a statue of William Pitt, erected before the Revolution—the British shot off one of the arms in 1780. There are monuments also to the Confederate dead and to John C. Calhoun, and a bust of Henry Timrod, the poet.

The Ashley is crossed by two bridges: that of the Charleston & S. R.R., and a toll-bridge known as the 'New Bridge.' Charleston has electric street railways with some 30 miles of track within the city limits, connecting with Chicora Park, about four miles from the city, on the Cooper, and with the Isle of Palms, a magnificent seaside resort about 10 miles north of the harbor. It also runs to the suburb of Mount Pleasant, across the Cooper, and eastern side of the harbor, and to Sullivan's Island, about three miles off, where is a fine bathing beach. Magnolia Gardens, 12 miles west on the Ashley, is a popular summer resort, but the chief one is Summerville, 22 miles northwest, with a dry, cool climate. Of the open spaces near the city, Magnolia Cemetery at the north end, is the chief. The city has a complete system of tidal drainage, and is in excellent sanitary condition.

*Education.*—The public-school system, established in 1810, had in 1902, six school buildings, about 100 teachers, and a total attendance of about 7,750, 4,200 colored; besides some 800 in private and parish schools. For higher education, the chief institutions are Charleston College, chartered in 1785, with a museum of natural history and a library; the South Carolina Military Academy, a State institution, established in 1843; Porter Military Academy, including Porter Manual Training Institute; the State Medical College, chartered in 1852; the Charleston and Memminger High Schools; the Academy of Our Lady of Mercy; Smith's School for Young Ladies; University School; and the Avery Normal Institute and the Wallingford Academy for Colored Youth.

*Churches and Charitable Institutions.*—There are over 60 churches in Charleston, the leading denominations being the Protestant Episcopal and the Presbyterian. It is a Roman Catholic bishop's see, and has a cathedral, St. Finbar's, rebuilt in 1890. The oldest church building is St. Michael's (P. E.), dating from 1761, with a fine chime, of interesting history; the oldest organization, however, is St. Philip's (P. E.), whose building was burned in the great fire of 1835, and whose present one is a Gothic structure of great beauty and originality, with a steeple nearly 200 feet high, bearing at night a beacon, visible far out at sea. The Circular Church (Congregational) is also noted; among others of interest are: Grace (P. E.), the Scotch, the Second, and Westminster (Presbyterian), Citadel Square (Baptist), the Old Huguenot, Unitarian, Bethel, and Trinity Methodist, and the Hebrew Synagogue. Of the charitable institutions, the most important are the Orphan House, founded in 1792, the Euston Home for the Aged; Home for Mothers, Widows, and Daughters of Confederate Soldiers; the City and the Roper hospitals; the almshouse; and the Old Folks' Home for Aged Colored People. Among charitable societies are St. Andrew's Society, founded by Scotchmen in 1720, and the South Carolina Society, founded by Huguenots in 1736.

*Banks.*—In 1900 there were 3 national and 13 savings and State banks, with an aggregate capital and surplus of over $2,700,000. There were also 14 building and loan associations in active operation, with aggregate capital amounting to about $1,500,000.

*Government and Finances.*—The government is by the charter of 1836; a four-years' mayor and a council elected half by wards and half at large. The administrative boards and officials are partly appointed by the mayor and partly elective by the council. The city expenses are about $600,000 a year, of which $60,000 each goes for schools and charities, $75,000 for police, and $50,000 for the fire department. The net debt is about $3,800,000; the assessed valuation of all taxable property $18,450,000, of which $14,000,000, is real estate.

*Population.*—In 1790, the first census, 16,359; 1800, 18,924; 1810, 24,711; 1820, 24,780; 1830, 30,289; 1840, 29,261; 1850, 42,985; 1860, 40,522; 1870, 48,956; 1880, 49,984; 1890, 54,955; 1900, 55,807; (1910) 58,833.

*History.*—The first settlement in South Carolina was made at Port Royal by the French, in 1562; it was not successful, but they never forgot the experiment or their favor for the region. In 1670 an English colony under Gov. William Sayle made for Port Royal also; but on the advice of the cacique of Kiawah (the then name of the Ashley), settled instead at Albemarle Point, on the west bank of the Kiawah, three miles from the present site,—fortunately, as the colony Lord Cardross planted at Port Royal was exterminated by the Spaniards in 1686. The

settlement was named Charles Town after Charles II. Within two years the settlers had discovered that Oyster Point, the end of the Charleston peninsula, was a better site, and in 10 years the latter had become the main settlement and the offices were removed there. In 1685–6 a colony of Huguenot refugees settled there and built a church; this strain has deeply molded Charleston and South Carolina, and its fiery zeal in heading every political movement is perhaps due to this quick French blood. In 1706, August, an allied French and Spanish fleet attacked the city but were driven off by a small improvised fleet under Lieut.-Gov. Rhett; shortly afterward another French vessel, unaware of the others' defeat, came up and landed a party, which was routed with heavy loss, and the survivors, with the ship and the rest of the marines, captured. The city at this time was desolated with yellow fever, but this militia action counts among the brilliant feats of the War of the Succession. In 1755 a colony of 1,200 deported Acadians settled there, still further reinforcing the French element. It was at this time the third seaport in size in America, and in 1774 established a chamber of commerce. It was not only the first Southern city to join the Revolutionary movement, but was the prime agent in bringing about the first provincial congress 10 years before; it held the first constitutional convention in any colony in 1776, March, and promulgated an independent constitution. On June 28, the British fleet, under Sir Peter Parker, besieged the city, and was beaten off with terrible loss by the garrison of Fort Moultrie behind an improvised palmetto fortification. In 1779 a second attack under Gen. Augustine Prevost was defeated. But in 1780, May 12, Sir Henry Clinton with 16,000 men captured it and its garrison of 7,000 under Gen. Lincoln, after a six weeks' siege; it was not re-occupied by the Americans till 1782, Dec. 14. In 1783 it was incorporated as a city, and remained the capital of South Carolina till 1790. In 1793 some 500 French refugees from the massacres of San Domingo settled there. It was the heart of the Nullification movement in 1832, as of all movements to oppose Federal authority first and last; and the Breckenridge convention of 1860 met here before adjourning to Baltimore The convention which proclaimed the State's secession from the Union was held here 1860, Dec. 20. The Civil War was begun by its bombardment and capture of Fort Sumter in 1861, April 12–13; and from 1863, April 7 on, for nearly two years, the fort was incessantly besieged and steadily bombarded by the Union fleet, for the last 18 months it being only a heap of ruins but impregnable. In 1865, Feb. 17, on the surrender of Columbia, Hardee evacuated the city and burned all public buildings, stores, and shipping, and the next day Foster and the union forces took possession. Despite its devastation and wreckage, it grew 21 per cent. from 1860 to 1870, while it had fallen

off in the previous decade,—a curious phenomenon. In 1886, 31 Aug., one of the heaviest earthquake recorded in the United States destroyed several hundred buildings, and made three fourths of the whole uninhabitable, killed scores of people, and caused a property damage estimated at $8,000,000. In 1901, Dec. 2, the South Carolina Interstate and West Indian Exposition was inaugurated in the city.

CHARLESTON: capital of West Virginia and of Kanawha co., on the right bank of the Kanawha at its junction with the Elk and on the Chesapeake & O., the Ohio Cent., and the Charleston, C., and Sutton R.Rs., 130 m. s. by w. of Wheeling and 233 m. w. by n. of Richmond. The valley yields coal, iron, and hardwood timber, for which Charleston is the central and distributing point. Charleston has several foundries, iron and saw-mills, and manufactures of boilers, furniture, woolens, carriages, firebrick, boats, colors, and veneer. The construction and repair shops of the Kanawha and Michigan R.R. are situated here. In the neighborhood are extensive deposits of oil and natural gas. The principal buildings are the capitol (cost $500,000), U. S. court, custom house, and post-office building (cost $123,000), and a public school building (cost $80,000). The city has derived great benefit from the improvement by locks and dams of the Great Kanawha river, undertaken by the govt. at a great expense. The river here is 130 yds. wide, and is navigable to its mouth 60 m. n.w. Charleston is an attractive city, beautifully situated, and has waterworks, gas-works, and electric light. Pop. (1870) 3,162; (1880) 4,192; (1900) 11,099; (1910) 22,996.

CHARLESTOWN: northern suburb of Boston, Mass., with which it was incorporated 1874, Jan. 5. It is situated on a peninsula $1\frac{3}{4}$ m. long between the Charles and Mystic rivers, connected with the mainland by a narrow neck or isthmus, with Boston by two bridges, built 1786 and 1828, and with Chelsea, East Cambridge, and Malden by other bridges. The Eastern, Fitchburg, and Boston and Maine railroads run through it. Charlestown was begun 1628; its Indian name was Mishawun. Winthrop's colony, arriving 1630, occupied its site for a few months, and founded the first church here, before they settled Boston. It grew in importance during the colonial period, and has an interesting subsequent history. Bunker Hill —or properly Breed's Hill, 700 yards from Bunker and connected with it by a ridge—became famous by the battle 1775, June 17, when the town was destroyed, partly by shells from Copps' Hill in Boston, and partly by British soldiers sent to fire it; nearly all the inhabitants had left previously, but the loss of property was over $500,000. It was rebuilt, and grew rapidly. The corner-stone of the Bunker Hill monument was laid 1825, and the shaft finished 1843; its top, 221 ft. high, affords a commanding view. Three streets, Main, Bunker Hill, and Medford, extend the length of the peninsula, join at the neck, and

lead to Somerville; they are crossed by others running from the Mystic to the Charles. Charlestown is well built in the main, though irregularly laid out in its s. portion. At the w. end, upon the water, stands the state prison, erected 1805, and since then much enlarged; it has 650 cells and some 38 officers, and is one of the best managed in the country, the earnings of the convicts, who are worked on the congregate system, nearly cover its expenses. The navy-yard, established in 1798, is one of the largest in the U. S.; it extends from one river to the other, covering over 70 acres, is capable of employing 2,000 men, and contains some $10,000,000 worth of government stores; it has machine-shops, cannon-foundries, three ship houses, a ropewalk nearly 1,300 ft. long, and a granite dry-dock 341 ft. long, 80 ft. wide, and 60 ft. deep, which was opened 1833 at a cost of $670,000. Charlestown has manufactures of steam boilers, cabinet ware, etc., and shares in the general industrial, commercial, shipping, railway, and municipal public services of Boston. It has fine schools, several churches, a public library established 1860, a poor fund founded 1674, a benevolent society organized 1819, and other charities. It is supplied with water from Mystic lake, 5 m. n.w.; the water-works were completed 1864 at a cost of $1,461,259, and are worked at a profit. Prior to its annexation by Boston, Charlestown contained three wards and was governed by a mayor with three aldermen and six common councilmen from each. From 2,751 in 1800 the population of Charlestown increased to 17,216 in 1850, and when annexed in 1874 numbered 28,323, of whom 6,924 were of foreign birth.

CHARLET, *shâr-lā'*, Nicolas Toussaint: 1792–1845; b. Paris: painter and engraver. He was for some years employed as a clerk in a govt. office, but lost his place at the restoration, 1815, on account of his Bonapartism, and betook himself to art. After studying under Gros, he gradually formed for himself a style in which he had no rival. Charlet is the Béranger of caricature, but without the political bitterness and sarcasm sometimes found in the poet. His genial sketches of French life and manners were studied with equal admiration in the salons of the aristocracy and in the ateliers, barracks, taverns, etc., of the lower classes. Charlet was especially successful in his sketches of soldiers and children. His designs are free from exaggeration, while full of spirit, interest, and naïveté; and his titles or mottoes were often so witty and suggestive, that dramatic writers have founded pieces upon them. His sketches and lithographs are very numerous and widely distributed. Among his paintings, the most remarkable are: *An Episode in the Russian Campaign* (in the museum at Versailles); *Moreau's Crossing of the Rhine* (at Lyon); and a *Procession of the Wounded* (at Bordeaux).

CHARLEVILLE, *shâr-le-vēl':* town of France, dept. of Ardennes, about a mile from Mezières, with which it com-

municates by a suspension-bridge over the Meuse. It is a thriving place, well built, with clean, spacious streets. It has manufactures of hardware, leather, and beer, and the Meuse affords facilities for considerable trade in coal, iron, slate, wine, and nails, Pop. (1881) 15,206, (1891) 17,390.

CHARLEVOIX, *shâr-lĕh-vwâ'*, or *shârl-vwâ*, Pierre François Xavier de: 1682–1761; b. St. Quentin. He entered the Society of Jesus, 1698, taught in the College of Quebec, 1705–09, and was afterward prof. of belles-lettres in France. He travelled much in the Jesuit interest, and was again in America, 1720–22, going up the St. Lawrence and the lakes, and down the Illinois river, and the Mississippi to the Gulf and home by way of Santo Domingo. His *Histoire de la Nouvelle-France* appeared 1744, and in an English version by J. G. Shea (6 vols. New York 1865–72). Charlevoix also wrote histories of Japan (1715), Santo Domingo (1730), and Paraguay (1756) and a *Life of Mother Mary, Superior of the Ursulines at Quebec* (1824). He was one of the directors of the *Journal de Trévoux*, 1733–55.

CHARLOCK, n. *châr'lŏk* [AS. *cerlice: lock*, meaning *leek;* prov. Eng. *kerlock*]: a wild plant of the mustard family—also called *kedlock;* a troublesome weed among corn, the *Sināpis arvensis*, ord. *Crucĭfĕræ:* see Mustard.

CHARLOIS, *shâr-lwâ':* village of the Netherlands, on the Maas, about two m. s.s.w. of Rotterdam. It is memorable for a terrible accident which occurred here, 1512, when a religious procession, crossing the ice in defiance of magisterial prohibition, 8,000 of them were precipitated into the Maas. Pop. 2,000.

CHARLOTTE, *shâr'lot:* city of N. C., cap. of Mecklenburg co.; on Sugar creek, 125 m. w.s.w. of Raleigh. It is on the Wilmington, Charlotte, and Rutherford R. R.; the Charlotte, Columbia, and Augusta and the N. C. div. of the Richmond and Danville have their termini here. Here the Mecklenburg 'Declaration of Independence' was adopted 1775, May 31. The town was occupied by the British 1780, and was afterward the American headquarters. Charlotte is in the N. C. gold region, and partially dependent on the mines. A branch mint was established 1838, and when closed, 1861, had coined over $5,000,000; it was reopened 1869, but under the coinage act of 1873 became a mere assay office. Charlotte has several cotton mills, iron mills, and manufactures of clothing, caskets, stoves, furniture, etc. Biddle Univ., a military institute, and two female colleges are situated here. Pop. (1900) 18,091; (1910) 34,014.

CHARLOTTE AMALIE, *shâr-lŏt' â-mâ'lē-ĕh:* chief, or rather only, town of St. Thomas, one of the Virgin group of the Antilles; lat. 18° 20′ n., long. 64° 55′ w. It contains nearly three-fourths of the entire population of the colony. It has a spacious harbor, which, besides being largely visited by European ships in general, is a prin-

cipal station for the mail-packets between Southampton and the West Indies. Pop. 11,400.

CHARLOTTE HARBOR, or Boca Grande: inlet in Manatee co., Fla., on the w. coast. It is about 25 m. long, 8 to 10 m. wide, and has a maximum depth of 10 to 12 ft.; the entrance, between Boca Grande Key and Gasperilla Bay, is ¾ m. wide and abt. 35 ft. deep. Islands shelter it from the sea; it yields fish, oysters, and wild-fowl. Cattle are exported from this region to Key West.

CHARLOTTENBURG, *shâr-lŏt'en-bûrg:* town of Prussia, province of Brandenburg, on the Spree, three m. w. of Berlin, with which it is connected by a road leading through the *Thiergarten,* and affording a favorite promenade to the Berliners. Charlottenburg contains a royal palace, with a fine garden and splendid orangery, and an interesting collection of antiquities and works of art. In a beautiful part of the park a mausoleum, designed by Schinkel, contains the remains of Frederick William III. and his wife, the queen Luise, with their statues by Rauch. Charlottenburg has iron-works and manufactures of machinery, electrical equipment, pottery, glass, leather, paper, and chemicals; engineering and technical schools, etc. Pop. 189,300.

CHAR'LOTTESVILLE: capital of Albemarle co., Va., on Moore's creek, two m. above the Rivanna river, 97 m. w.n.w. of Richmond; on the Chesapeake and Ohio R. R., 61 m. n.n.e. of Lynchburg by the Orange, Alexandria, and Manassas R. R. Charlottesville has manufactures of woolen goods, furniture, flour, cigars, electric light and power. Monticello, Jefferson's home, is within three m., and one m. w. is the Univ. of Va., founded by Jefferson, 1819, with buildings which cost $200,000. Pop. (1910) 6,765.

CHARLOTTETOWN, *shâr'lot-town,* Canada: a city of Queen's county and capital of Prince Edward Island, in the Gulf of St. Lawrence; lat. 46° 15′ n., and long. 63° 7′ w.

*Situation.*—C. is the central terminus of the P. E. I. railway. The port is the best in a colony which, in proportion to its size, is remarkable for navigable facilities. The town stands on the s. e. coast at the inner end of Hillsborough bay, and at the confluence of three rivers, which each admit the largest vessels for several miles, where there is security from all weather. The harbor is rendered still more commodious through the strength of the tides, which enable ships to work out and in against the wind.

*Commerce and Industry.*—Steamship lines connect regularly with the various ports of the Dominion, the chief articles of export being fish and agricultural, dairy and poultry products. The fisheries have become of great importance among the industries of the island; oysters and lobsters (canned) are shipped in large quantities mostly to Canadian ports. Agriculture is carried on to some extent, the land in the vicinity being very fertile;

CHARLESTON, S. C., IN 1861, LOOKING ACROSS COOPER'S RIVER.

especial attention is given to the raising of horses which enjoy a wide reputation. The chief industries are iron foundries, carriage factories, railway workshops, pork-packing, condensed milk and tobacco factories.

*Public Works, Buildings, Etc.*—The city has excellent water and sewerage systems; the streets are wide and well-paved with cement or plank sidewalks; and is lighted by gas and electricity. The principal buildings are the Dominion and Provincial buildings, city hall, post-office and court-house, market and exchange buildings, numerous churches, Y. M. C. A building, hospitals and an asylum for the insane. It is the see of a Rom. Cath. bishop. The public school system is excellent. There are, besides, the Prince of Wales College and Normal School, St. Dunstan's college, two convents and two business colleges.

*Government and History.*—The city government is vested in a mayor and a board of aldermen, elected by the citizens. Charlottetown was chosen as a site for the capital of the Island by Captain Samuel Holland, surveyor general, in 1764. The old French capital, Porte la Joie, was situated opposite Charlottetown at the entrance of the harbor. In 1775 two American privateers raided the city, but Gen. Washington condemned the action and ordered the return of the prisoners and the restoration of all property. The confederation of the Canadian Provinces was first actively discussed at a conference held in C. in 1864. The city was incorporated in 1855. Pop. (1891) 11,373; (1901) 12,080.

CHARLTON, *chârl'tŏn*, John, Canadian statesman: b. near Caledonia, N. Y., 1829, Feb. 3. He was in early life a clerk, but removed to Canada in 1849, and entered business and political life. He was elected as a Liberal to the Canadian House of Commons in 1872, and has held his seat continuously since then. He is best known as a promoter of moral legislation. He has published *Parliamentary Recollections.*

CHARLTON, John, English artist: b. Bamborough, Northumberland, England, 1849, June 28. He studied art at Newcastle and South Kensington, and beginning to exhibit at the Royal Academy in 1870 has exhibited there regularly since that date. Among important works of his are *Stag at Bay; Reynard's Requiem; God Save the Queen; The Funeral of Queen Victoria; A Winter's Day; The Hall Fire; Rescue; Huntsman Courtship; Gone Away; British Artillery entering Enemy's Lines at Tel-el-Kebir; Ulundi; Bad News From the Front; Incident in the Charge of the Light Brigade;* etc.

CHARM, n. *chârm* [F. *charme;* It. *carme,* a charm, a spell—from L. *carmen,* a song; Gael. *seirm,* music; Pers. *shirim,* songs—*lit.,* to enchant or hold spell-bound with music]: properly, a form of words, usually in verse, supposed to possess some occult power of a hurtful, a healing, or a protective kind, which they exert either by being re-

cited, or by being written and worn on the person; and, in this latter case, they may be classed with Amulets (q.v.); see also Incantation: Magic); anything supposed to possess a magic power or spell; that which can subdue or delight: V. to subdue or control; to exercise irresistible power over; to please or delight greatly; to yield exquisite pleasure to the mind or senses; to fortify against evil. Char'ming, imp.: Adj. pleasing in the highest degree. Charmed, pp. *chârmd*, greatly delighted: Adj. *châr'mĕd*, enchanted; protected by charms. Char'mer, n. *châr'mėr*, one who has the power of charming; an object of love. Charm'less, a. without charms. Charms, n. plu. what pleases irresistibly; that which delights and attracts, as beauty, music, conversation. Char'mingly, ad. *-lĭ*, in a manner to please exceedingly. Char'mingness, n. — Syn. of 'charm, v.': to enchant; fascinate; enrapture; captivate; allure; delight; bewitch; subdue; enslave.

CHARNEL, a. *châr'nĕl* [OF. *charnier*, a churchyard—from F. *chair*—from L. *carnem*, flesh]: containing flesh or carcasses. Charnel-house, n. a place in or near some burial-grounds in which the bones of the dead thrown up by the grave-diggers were deposited. The C. was usually vaulted in the roof, and was often a building complete in itself, having a chapel or chantry attached to it. In such cases, the charnel-vault was commonly a crypt under the chapel; and even in churches it was not uncommon for the vault or crypt to be employed as a charnel-house. The term is applied also to a place where too many dead bodies are crowded together.

CHARNOCK, *châr'nok*, Stephen, d.d.: 1628–80, July 27; English nonconformist. He was educated at Emmanuel College, Cambridge, obtained a fellowship at New College, Oxford, preached in London and Dublin, and after the restoration at private assemblies in England. His works were published by Adams & Veel, 2 vols. folio, 1682–83, reprinted 9 vols, 8vo. 1815, and again 1866. Charnock stands high among Calvinistic divines. Toplady credited him with 'metaphysical sublimity and evangelical simplicity, immense learning but irrefragable reasoning.' His *Discourses on the Attributes* are still praised.

CHARON, n. *kā'rŏn:* in *classical myth.*, the son of Erebus (darkness) and Nox (night); mentioned first by the later writers of Greece. His duty was to ferry the shades of the buried dead across the rivers of the underworld. For this service he exacted an *obolus* from each, and in consequence a coin of this kind was placed in the mouth of the dead. If this rite was neglected Charon refused to convey the unhappy shade across, and it was doomed to wander restlessly along the shores of Acheron. Charon is generally represented as a gloomy old man, with a rough beard and wretched clothes. In the Etruscan monuments he holds a hammer.

CHARPIE, n. *shârp'ē* [F. *charpie*, lint compress]: the

fine flock obtained by scraping linen rags or lint; a coarse kind of lint or tow, used for absorbing blood, matter, and the like.

CHARPOY, n. *châr'poy* [Hind. *char*, four; *páe*, legs]: in India, a rude bedstead on four legs, with a mattress woven from strips of cloth, fibre, and the like.

CHARQUI, n. *châr'kē* [from a native name]: the S. American term which gave rise to the Eng. term *jerked beef;* beef or flesh cut into long strips and dried in the sun.

CHARR, *châr* (*Salmo umbla*): a fish of the same genus with the salmon, occurring in the lakes of Britain and of the continent of Europe. It is abundant in the lakes of Cumberland and Westmoreland, and in some of those of Ireland, of the n. of Scotland, and of Orkney, but in the greater number of the Scottish lakes it is not found. It is the celebrated *ombre chevalier* of the lake of Geneva. It is found sometimes weighing more than two lbs., but is generally under one lb. in weight. It has only the anterior part of the *vomer* (the middle line of the palate) furnished with the teeth, agreeing in this with the salmon and bull-trout, and differing from the common trout, salmon trout, etc. The form is elongated, the greatest depth of the fish is about one-fifth of the entire length; the fins are rather small; the tail deeply forked; the color of the back dark olive; the sides lighter and spotted with either red or white, according to the condition in which the fish is at the time, the belly also being sometimes deep orange, and sometimes of a pale color, these, and other accidental variations, causing the fish to receive different names such as *Case C.*, *Red C.*, *Gilt C.*, *Silver C.*, and having led some naturalists to believe in the existence of different species. It is not yet quite certain whether the *Torgoch* or *Red-belly*, of Wales (*Salmo salvelinus* of some authors), ought to be regarded as distinct or as a mere accidental variety. It is the most delicious, perhaps, of the *Salmonidæ;* also the most beautiful, its rich purple, rosy, and crimson tints and white spots rendering it a brilliant and striking object. During summer the charr frequents chiefly deep, cool water, and is seldom seen at the surface till late in autumn. It feeds on insects and minute crustaceans. In the end of autumn or beginning of winter it ascends rivers to spawn, always choosing those which have a rocky bottom. Whether in lake or stream it is found only in clear waters. Unfortunately the charr of the English lakes is taken in great numbers, by nets, at the mouths of streams, when about to ascend them in order to spawn, and when not in the best condition for the table.

On some lakes vast quantities are then caught for the table, particularly for the purpose of potting. In a lake which abounds in charr one of them is now and then taken by the angler for trout. The charr will, too, occasionally take a minnow, if sunk deep and trailed slowly; but the sport it affords is precarious. Charr are fast

diminishing in the English lakes which they still inhabit, owing to the indiscriminate slaughter which occurs at the spawning season. A large kind of charr, sometimes reaching four lbs. in weight, is found in some of the more northern Swedish lakes.

CHARRAS, *shâr-râ*, Jean Baptiste Adolphe, a French republican soldier and statesman: b. Pfalzburg, Lorraine, 1810, June 7; d. Basel, Switerzland, 1865, Jan. 23. He took part in the revolution of 1830, was promoted in 1833 to the rank of lieutenant, wrote a series of able articles in the *National* on military affairs, which gave umbrage to the government and caused him to be sent to Algeria; distinguished himself there on the battlefield as well as in the training of native troops and the colonization of the country. After the revolution of 1848 he became under-secretary of state and representative for the department of Puy de Dome. He was one of the victims of the *coup d'état* of 1851, Dec. 2. First detained at Ham, he was transported to Belgium in 1852, but expelled from that country in November, 1854, at the request of Louis Napoleon, whom Charras had denounced on many occasions, but most effectively in a letter of which 50,000 copies were printed in Belgium alone. A remarkable work from his pen, *Histoire de la campagne de* 1815, appeared in 1857.

CHARRAS, *chăr'ras* or *chŭr'ras*, a resinous substance which exudes from the Indian hemp and is collected for use as a narcotic or intoxicant, forming a considerable article of trade in Asia. See Hemp.

CHARRIERE, *shär-rē-ãr*, Madame St. Hyacinthe de, French authoress, well known under the assumed name of the Abbé de la Tour: b. Holland about 1740; d. 1805, Dec. 20. In early life she became a maid of honor at the court of the Stadtholder. Her affection for her brother's tutor, M. de Charriére, a worthy but decayed nobleman, led her to forego her rank and family, and shortly after her marriage she retired with him to a small property at Neufchâtel. Her lively temperament was ill-suited for the monotony of a rustic life, and accordingly seeking amusement in literary recreations she soon acquired a considerable reputation. Having lost the greater part of her fortune in the French Revolution, she reduced her expenditure to the lowest possible amount, that she might be able to continue her various acts of benevolence. Her works belong chiefly to the class of light literature. Among others may be mentioned *Les Trois Femmes;* and the favorite dramas of *Le Toi et le Vous; L'Emigré; L'Enfant Gate;* and *Comment le nomme-t-on.* All these productions not only display much wit, truth, and powerful description, but also breathe a spirit of philosophy, and have a strong moral tendency. Most of them were translated into German by her friend Herder.

CHARRON, Pierre, *pē-âr shâ-ron*, French preacher and writer: b. Paris 1541; d. 1603, Nov. 16. He studied

law at Orleans and Bourges, and had practised for six years as a parliamentary advocate when he turned his attention to theology, and gained so much fame by his sermons that he was presented in rapid succession with several benefices in Gascogny and Languedoc, and appointed court chaplain to Queen Margaret. In 1588 he returned to Paris with the view of fulfilling a vow he had made to enter the Carthusian order, but owing to his age the prior of the order refused him admission, and the Celestines also declining to receive him, he continued a secular priest. In 1589 he went to Bordeaux and became very intimate with Montaigne whom he tried to imitate, though he failed to catch his ease of style, and original, piquant wit. His principal works are *Traité des Trois Vérités*, and *Traité de la Sagesse*. The Rom. Cath. zeal of the former drew down upon him the rebuke of Duplessis-Mornay; and the extreme liberalism of the latter exposed him to a charge of atheism, the treatise being condemned both by Parliament and the University.

CHART, n. *chârt* [L. *charta*, paper; Gr. *chartēs;* It. *carta;* F. *carte*]. a map of any part of a sea or river for the use of navigators; the representation of a ship's course; a map of the waters of the globe or any portion of it, with the islands, coast-lines, soundings, currents, etc.; a map (q.v.). Navigating charts, showing the dangers of coasts to enable mariners to avoid them, are usually on a scale of half-an-inch to a mile; larger ones show all the intricacies of the coast. The term is commonly restricted to those intended for navigators' use, on which merely the outlines of coasts, islands, etc., are represented. A globular chart is a chart constructed on a globular projection. A Mercator's chart is a chart on the projection of Mercator. A plane chart is a representation of some part of the superficies of the earth, in which the spherical form is disregarded, the meridians drawn parallel, the parallels of latitude at equal distances, and the degrees of latitude and longitude equal. A selenographical chart is a chart representing the surface of the moon; and a topographical chart is a chart of a particular place, or of a small part of the earth. Nearly all civilized nations have published charts of their coast lines in greater or less detail, and the principal maritime nations copy those issued by other nations, and thus maintain for the use of their own seamen charts of all parts of the world to which their commerce may extend. CHART'LESS, a. without a chart. CHARTOGRAPHY also properly written CARTOGRAPHY) n. *châr-tŏg'ră-fĭ* [Gr. *grapho*, I write]: the art of constructing maps or charts. CHARTOGRAPHER, n. *châr-tŏg'ră-fėr* [L. *charta*, paper; Gr. *grapho*, I delineate, I write]: a constructor of charts or sea-maps. CHAR'TOGRAPH'IC, a. *-tō-grăf'ĭk*, relating to charts.

CHARTA, MAGNA: see MAGNA CHARTA.

CHARTACEOUS, a. *châr-tā'shŭs* [L. *charta*, paper; Gr. *chartēs*]: in *bot.*, resembling paper; thin; flexible.

CHARTE, *shârt* [see CHARTER, which is the English term corresponding]: French word signifying a system of constitutional law, embodied in a single document. Whether any system of positive public law existed in ancient France is, in that country, a subject of keen dispute among constitutional antiquaries. If any such there was, there seems little doubt that it was the mere embodiment of traditions, and not the result of any single act of the national will. While France was divided into provinces and communes, local liberties and privileges unquestionably existed; but where the nation constituted no single body, a constitutional charter was impossible. The first traces of such a C. appear in the 14th c.; and it is known in the history of the public law of France as the *Grand Charter*, or the charter of King John. Up to this time, the kings had called together only partial assemblies, but in 1355 deputies from the whole kingdom were assembled in the hall of the parliament of Paris. The nobility and clergy, secular and regular, were represented by 400 deputies, the commons or third estate by a like number. This body assumed to itself the initiative, and prepared a species of constitution, which was accepted by the king. The chief triumph of the third estate on this occasion consisted in carrying through the doctrine that the decision of any two estates should be invalid without the concurrence of the third. The three orders, who seem to have composed but one assembly, then proceeded to impose a series of restrictions on the power of the monarch, which, confirmed by the dauphin two years later, formed the foundation for the liberties subsequently asserted at the Revolution.

But the constitution to which the term C. is most frequently applied by the French and by us, is that in which Louis XVIII. solemnly acknowledged the rights of the nation on his restoration in 1814. This C. has ever since been considered the fundamental law of constitutional monarchy when that form of government has existed in France. In some of its provisions, however, and still more in the mode of its acceptance by the monarch, as 'a voluntary and free act of our royal authority,' and as 'a concession made to,' not a contract entered into with, his subjects, it was open to the misconstructions which eventually led to the revolution of 1830. The charte sworn to on Aug. 29 of that year by King Louis Philippe modified this and some of the other provisions of that of 1814. On that occasion the king explicitly recognized the sovereignty of the people. This document, which, with some modifications, remained in force till the revolution of 1848, is important, not only from its bearing on the past history, and possibly on the future of France, but from the analogies which it presents to other constitutions, notably the British.

It consisted of 67 articles, divided into 7 heads. Of these the 1st head, containing 11 articles, treated of the public rights of the French people. It provided for the equality of all Frenchmen—a doctrine which it inherited from the revolution, and which it unfortunately left to be understood in a sense inconsistent with monarchy, and

indeed with any other form of government than pure democracy (see EQUALITY); for their equal admissibility to all employments, civil and military, and for their freedom from arrest, otherwise than by legal process. It guaranteed the enjoyment of religious liberty, and the payment of the ministers of all Christian denominations—a privilege which in 1831 was extended even to Jews. The liberty of printing and publishing was insured, the censorship of the press and conscription were abolished, an amnesty for all political offences was proclaimed, and the security of property guaranteed, except when its sacrifice should be requisite for the public good, in which case it was declared that the owner must be indemnified. The 2d head set forth the nature and limitations of the kingly power in eight articles. The supreme executive power, the command of the army and navy, and the right of making war, and treaties of peace, alliance, and commerce, were reserved to the monarch. To him, also, it belonged to nominate to all offices of public administration, to make all necessary regulations for the execution of the laws, but in no case to suspend them or dispense with them. The high duties of legislation were shared between the king, the chamber of peers, and the chamber of deputies; it being provided that every law should be agreed to by a majority of each chamber, and sanctioned by the king. Any one of the three branches of the legislature might originate any bill, except a money-bill which was reserved for the chamber of deputies, as for the house of commons in England. The third head contained ten articles regarding the chamber of peers, the nomination of whom was vested in the king (the princes of the blood being peers by right of birth). No limit was set to their number; but by the law of 1831, Dec. 9, incorporated in the C., it was declared that their dignity should be for life only. The chancellor of France was president. The chamber of peers assembled simultaneously with that of the deputies, and its sittings were public. The personal privileges of the peerage, as they exist in England, were introduced. The 4th head, concerning the chamber of deputies, contains sixteen articles. It provides for the election of the deputies and the sittings of the chamber. The electoral qualification is declared to be the payment of 200 francs of direct taxes, while that of a deputy is the payment of 500. The voting is by ballot, both at elections and in the chambers. The number of deputies, at first 430, was afterward raised to 459. Each deputy was elected for five years, and one-half of those for each department were required to have their political domicile within it. The C. became a nullity by the revolution of 1848, Feb; and by the new constitution promulgated Nov. 4 of that year, the monarchy of France was converted into a democracy. By chapter 4 of that document, the legislative power was vested in a single assembly of 950 members, including the representatives of Algeria and the other colonies. The property electoral qualification was abolished, and the age reduced for electors to 21 years, and for delegates to 25. The period of three years was fixed for

the continuance of the national assembly. By chapter 5, the executive power was intrusted to a citizen who was to bear the title of president. He was not to be less than 30 years of age, his tenure of office was to be four years, and he was not to be re-eligible until after an interval of four years. For an account of the subsequent changes by which these and the other arrangements adopted at the revolution of 1848 have since been superseded. see FRANCE.

CHARTER, n. *chär'tėr* [F. *chartre*, a charter—from L. *chartŭla*, a dim. of *charta*, paper]: any written paper or document conferring privileges or confirming rights; privilege; exemption: V. to hire or let a ship under a written agreement. CHAR'TERING, imp. CHAR'TERED, pp. *-tėrd:* ADJ. acting under a charter; privileged. CHARTIST, n. *chär'tĭst*, one of a body of political agitators who demand radical changes in the government.

CHAR'TER: in most general signification, an official instrument, or document, establishing rights and privileges; a deed evidencing a transaction. In private law, its most important use is in the alienation of real estates, the writing given to the new proprietor by the old, in proof of the transference of title, being often called a charter: see TENURE OF LAND. In public law, the name is given to those formal deeds by which sovereigns guarantee the rights and privileges of their subjects, or by which a sovereign state guarantees those of a colony or other dependency: see CHARTE: MAGNA CHARTA. There is another sense of the term, in which it is in a measure intermediate between the two above mentioned—viz., where we speak of the charter of a bank or other company or association. In this latter sense it signifies an instrument by which powers and privileges are conferred by the state on a select body of persons for a special object: see BANK: CORPORATION: JOINT-STOCK COMPANY: etc. For the requisites of a charter, in private law, see DEED.

ROYAL CHARTERS, generally written in Latin, are of two kinds: I. Grants of lands, houses, honors, or liberties to persons who did not previously possess them; II. Charters confirming grants previously made, therefore called 'Charters of Confirmation.' Confirmation charters are of three kinds: 1. Charters confirming previous grants, without reciting them; 2. Charters of simple confirmation, without addition of anything new; 3. Charters reciting previous charters and confirming them, with addition of something new. These last two classes of charters are called charters of 'Inspeximus,' or 'Vidimus,' from the word used by the granter in saying that he has seen the charter which he confirms. Royal charters generally contain seven clauses: 1. The 'Premises,' i.e., the name and style of the granter, the persons to whom the charter is addressed, the name and style of the grantee, the reason why the grant is made, and the description of the thing granted; 2. The 'Tenendum and Habendum,' i.e., the way in which the thing granted was to be held and had. 3. The 'Reddendo,' the return of rent or service which was

to be made to the granter by the grantee; 4. The 'Quare Volumus,' or order that the grantee should have the thing granted, under certain penalties; 5. The 'Sealing' or 'Signature' clause, setting forth the seal, signature, or subscription by which the charter was authenticated; 6. The 'Hiis Testibus,' or testing-clause, enumerating the persons who were present as witnesses when the charter was granted; 7. The 'Date,' setting forth the time when, and the place where, the charter was granted.

CHARTER, in the law of Scotland, is the written evidence of a grant of heritable property, under the conditions imposed by the feudal law—viz., that the grantee, or person obtaining, shall pay at stated periods a sum of money, or perform certain services to the granter, or person conferring the property.

Charters are either blench or feu, from the nature of the service stipulated—*a me* or *de me*, from the kind of holding or relation between the granter and grantee; and original or by progress, from being first, or renewed, grants of the subjects in question.

*Blench and Feu Charters.*—The duty which the superior required of his vasssal in former times was almost always military service, and the vassal was then technically said 'to hold ward'—to hold on condition of warding or defending his superior. But subsequent to the rebellion of 1745, in which the dangerous tendencies of the feudal relation were experienced, this holding was abolished (20 Geo. III. c. 50), and the only duties which it has since been lawful to insert in charters are *blench* and *feu* duties. The former is a merely nominal payment—a penny Scots, a red rose, or the like, *si petatur tantum* (should it be asked); the latter is a consideration of some real value. Original blench charters having lost all object, and having no other effect but that of subjecting superiors to considerable expense in keeping up their titles, have become rare in modern practice. The forms of charters varying according to the circumstances in which they are granted, and the relations established between the granter and grantee, are of a highly technical nature.

CHARTER OF A CORPORATION, is the instrument which creates the corporation. In England corporations were created in most instances by royal charter. They are now generally created in that country by or under the acts of Parliament.

In this country they are created by authority of the legislature under general acts whereby the simple filing of a prescribed instrument, persons may form a corporation without applying to the legislature at all. These general acts specify the contents of the instrument to be filed and specify also the powers of the corporation. Those provisions in the articles which are not responsive to some specification in the law can only have the force and effect of a charter provision. Such a provision not called for by the law will be a mere voluntary proposal from the asssociation. It will be lacking in the essential elements of a compact, will derive no operative energy from the

statute, and can have no claim to the dignity and effectiveness of a charter regulation. Hence companies or societies which are not expressly sanctioned by the legislature in the form of some general or special law, are in respect of third parties, generally regarded as no more than partnerships, though as among their own members, the rights and obligations created by their private statutes, not opposed to public policy or express law, may be different from those of partners.

CHARTER-HOUSE, n. *châr'tėr-hows* [a mere corruption of *Chartreuse*, a town in France, the original seat of the Carthusians]: name of a famous hospital, chapel, and public schoolhouse. Till 1872 the buildings were close together in Charter-house Square, London; but in that year the school was transferred to Godalming in Surrey. The Charter-house was instituted, 1611, by Sir Thomas Sutton, of Camps Castle, county of Cambridge. It had originally been a Carthusian monastery (founded 1371), but on the dissolution of monastic establishments by Henry VIII., it was made a place of deposit for his nets and pavilions. After undergoing many alterations, and passing into the possession of various distinguished persons, it was finally purchased from Lord Suffolk, for £13,000, by Sir Thomas Sutton, who endowed it with the revenues of upward of 20 manors, lordships, and other estates, in various parts of England. This 'masterpiece of Protestant English charity,' as old Fuller calls it, serves three uses—it is an asylum for poor brethren, an educational, and a religious institution; hence Bacon terms it a 'triple good.' The *poor brethren* are 80 in number. None are admitted under 50 years of age, and only those who have been housekeepers are eligible. Each brother has a separate apartment, a share of attendance from domestics, an ample, though plain diet, and an allowance of about £26 a year for clothes and other matters, and four weeks' holiday every autumn. The brethren must be bachelors and members of the Church of England. Among the poor brethren in bygone years were Elkanah Settle, the antagonist of Dryden; John Bagford, the antiquary; Isaac de Groot, a descendant of Grotius; and Alexander Macbean, who assisted Johnson in the preparation of his dictionary. The *scholars* are 60 in number, admissible between the ages of 11 and 15. They are understood to be 'the sons of poor gentlemen to whom the charge of education is too onerous;' but, as in the case of the *poor brethren*, it is not always the proper parties who are chosen. There are exhibitions, scholarships, and medals competed for at certain times by the scholars. In addition to the scholars properly so called, i.e., such as receive a free board and education, a large number of youths are sent to the Charter-house school because of its reputation. These either board with the masters, or simply attend during the day. The number of extra boarders is nearly double that of the scholars. The institution is under the

direction of the King, 15 governors, selected from the great officers of state, and the master himself, whose salary from the foundation is £800 per annum. Among eminent persons educated in this establishment, are Dr. Barrow, Judge Blackstone, Addison, Steele, John Wesley, Bishop Thirlwall, George Grote, W. M. Thackeray, and Sir Charles Eastlake.

In 1872, when the Charter-house school removed to Godalming, the school premises were sold to the Merchant Tailors' School, which is now installed here in handsome new school buildings, erected 1875. The quaint old Charter-house hospital and chapel still remain on the old site. The chapel contains Sutton's tomb, which was opened and examined in 1842.

CHARTERIS, Archibald Hamilton, Scottish clergyman: b. Wamphay, Dumfriesshire 1835, Dec. 13. He was educated in the University of Edinburgh, where in 1808, after holding two Presbyterian pastorates, he became professor of biblical criticism. In 1898 he was made professor emeritus. Since 1901 he has been chaplain-in-ordinary to King Edward VII. He has published *Life of Professor James Robertson* (1863); *Canonicity* (1881); *The Christian Scripture* (1888).

CHARTER OAK: a tree nearly seven feet in diameter, formerly in Hartford, Conn.; it blew down in a storm, 1856, Aug. 21. A section of its trunk was preserved in the rooms of the Connecticut Historical Society. It is thus venerated from a tradition, first accredited to it in 1789, that in a hollow of it was concealed the charter of Connecticut rescued from Andros in 1687. James II., wishing to make Connecticut a part of his consolidated New England under Andros (q.v.), found its charter in the way; and as the colony declined to surrender it, he brought writs of quo warranto to vacate it, the last of which was returnable in 1687, Feb. To delay or avoid voluntary surrender, yet escape forfeiture and entire outlawry of rights, they replied that they would much rather stay as they were, but if they could not, preferred a provincial union under Andros over annexation to any other province. The Council chose to consider this a formal waiver of charter rights, and dropped proceedings under the writ; and on 1687, Oct. 31, Andros rode over from Norwich to Hartford, under orders to assume the government. Calling the governor and council together, he demanded surrender of the charter according to their dutiful assurances. The meeting was secret. The colonial officials protested and debated till after dark. Candles were lighted; the charter was (or the charters were) at last brought in and laid on the table; suddenly some officious candle-snuffers put out all the lights, and when they were relighted no charter was to be seen, and it was supposed to have been hidden in this tree.

CHARTER-PARTY [F. *chartre-partie*—so called from

such documents being at one time divided—in F. *parti*—and one half given to each party concerned]: contract, of which two copies are written, in which the owner, or master of a ship, with consent of the owner, lets the vessel, or a portion of her, to a second party, for the conveyance of goods from one port to another port: hence the vessel is said to be *chartered*. The document must specify the voyage to be performed, and the terms on which the cargo is to be carried. On the part of the ship, it is covenanted that she shall be sea-worthy; well-found in rigging, furniture, and provisions; and that the crew be suitable in number and competency; that she shall be ready to receive the cargo on a given day, await its complete delivery for a certain period; and sail for the stipulated port when laden, if the weather for the time permits. The freighter's portion of the contract obliges him to load and unload at suitable periods, under specified penalties, and to pay the freight as agreed on. The master must not take on board any contraband goods, or otherwise render the vessel liable to seizure. The owner is not responsible for losses caused by war, fire, or shipwreck, unless arising from negligence of the master or crew.

CHARTERS TOWERS, Australia, a mining township of Queensland, on the northern spurs of the Towers Mountain, 820 miles northwest of Brisbane. The place was first settled in 1871–2, when gold was discovered there. In 1877 it was incorporated as a town. Now it has railway connection with the coast by means of a railroad to Townsville. The yield from the gold fields since their discovery has been many millions of ounces. Pop. of the town, 4,597; of the field, 14,129.

CHARTIER, *shâr-te-ā'*, Alain: abt. 1385–1449: poet; b. Bayeux. His life is involved in obscurity, but according to the most probable traditions he studied at the Univ. of Paris; was in the service of Charles VI. and then in that of the dauphin, afterward Charles VII., who used him as clerk, notary, and sec. of finance; was also archdeacon and prebendary of Nôtre Dame, and went as envoy to Scotland. In appearance he was deemed the ugliest man of his time, but Margaret of Scotland is said to have kissed him on 'the precious mouth whence have come so many *bon mots* and moral sentences.' Pages and students were required daily to learn by heart passages of his *Bréviaire des Nobles*. His poems are often graceful and nervous, and his vigorous prose contains many fine thoughts and prudent maxims. His fame, which in his lifetime surpassed that of any contemporary, has since been eclipsed, and revived but imperfectly. His best books are said to be *Le livre des Quatre Dames*, occasioned by the battle of Agincourt, and *Le Quadriloque-Invectif* (1422). The first edition of his works which bears a date is that of 1498; the most esteemed that of 1617. A 'bibliographic and literary study of Chartier, by Mancel, appeared in Paris 1849.

CHARTISM, *chärt'izm*: movement in Great Britain for the extension of political power to the great body of the people, arising in a great measure out of widespread national distress and popular disappointment at the results of the reform bill. Prior to 1831, the middle classes had sought popular aid toward obtaining their own enfranchisement. The assistance was given, the people expecting to receive help in their turn. After the passing of the reform bill agitation ceased for a time, and the members returned to parliament were indifferent, or opposed, to any further change in the political arrangements of the country. The middle classes were satisfied with their own success, and generally looked with small favor on projects for the further extension of political influence among the masses. A season of commercial depression set in about 1835, and failing harvests for several years terribly increased the sufferings of the people. Food became dear, wages fell, manufactories were closed, work became scarce. The people associated their sufferings with their want of direct influence upon the government, and agitation for an extended franchise began. In 1838, a committee of six members of parliament and six workingmen prepared a bill, embodying their views as to what were just demands on the part of the people. This was the 'People's Charter.' It claimed—1. The extension of the right of voting to every (male) native of the United Kingdom, and every naturalized foreigner resident in the kingdom for more than two years, who should be 21 years of age, of sound mind, and unconvicted of crime; 2. Equal electoral districts; 3. Vote by ballot; 4. Annual parliament; 5. No property qualification for members; and 6. Payment of members of parliament for their services. This programme was received with enthusiasm. Immense meetings were held all over the country, many of them being attended by two or three hundred thousand people. Fiery orators fanned the popular excitement, and under the guidance of the extreme party among their leaders, physical force was soon spoken of as the only means of obtaining justice. The more moderate and thoughtful of the chartists were overruled by the fanatical and turbulent spirits, and the people, already aroused by suffering, were easily wrought into frenzy by those who assumed the direction of their movements. In the autumn of 1838, torchlight meetings began to be held. The danger of these meetings was obvious, and they were at once proclaimed illegal. Some of the more prominent leaders were arrested, amid intense popular excitement, and subjected to various terms of imprisonment. A body calling itself the national convention, elected by the chartists throughout the kingdom commenced sitting in Birmingham in 1839, May. It proposed to the people various means of coercing the legisla, ture into submission, recommending, among other things, a run on the savings-banks for gold, abstinence from excisable articles, exclusive dealing, and in the last resort, universal cessation from labor. During its sittings, a collision took place with the military in Birmingham. Pub-

lic meetings were forbidden, and alarming excesses were committed by the irritated mob. In 1839, June, a petition in favor of the charter was presented to the house of commons, signed by 1,280,000 persons. The house refused to name a day for its consideration, and the national convention retaliated by advising the people to cease from work throughout the country. Fortunately, this advice was not followed, but the disturbance in the public mind increased, and in November, an outbreak at Newport took place, which resulted in the death of ten persons and the wounding of great numbers. For taking part in this wild insurrection, three of its leaders were sentenced to death, but their punishment was afterward commuted to transportation. In 1842, great riots took place in the northern and midland districts, not directly caused by the chartists, but encouraged and aided by them after the disturbances began. In the same year, an attempt was made by Joseph Sturge to unite all friends of popular enfranchisement in a complete suffrage union, but he succeeded only in dividing their ranks. In 1848, the turmoil in France created great excitement in England, and much anxiety was felt lest an armed attempt should be made to subvert the institutions of the country. Two hundred thousand special constables were enrolled in London alone. There were several local outbreaks, and much real danger, but the attempts at disorder were efficiently met, and, as usual, the only result was the punishment of the more prominent men, and the postponement of the desired reforms.

Since 1848, C. has gradually died out. Its principles were not new. The Duke of Richmond, in 1780, introduced a bill into the house of lords to give universal suffrage and annual parliaments. In the same year, Charles James Fox declared himself in favor of the identical six points afterward included in the charter. And nearer our own time, Earl Grey, Mr. Erskine, Sir James Mackintosh, and many others, formed a 'Society of Friends of the People,' which aimed at obtaining a very large extension of the suffrage.

The great body of chartists were, however, not so much actuated by the weight of precedent or argument, as impelled by the pressure of actual want, and an indefinite feeling that the laws were somehow to blame for not providing them with the means of comfortable subsistence. But there were many among them who had studied the principles involved in their demands, and maintained them from an intelligent conviction of their truth. These men declared that all persons had an equal natural right to share in determining the laws under which they lived; and further, that as they were required to contribute to the taxation of the country, they were justly entitled to be heard as to the application of the public funds. Taxation and obedience being universal, representation ought to be so. This view being conceded, all the other points of the charter naturally followed, they being merely arrangements for securing the free action of the right contended for. Some of the chartist advocates went far beyond

this. There were those among them whose aims included little less than the reorganization of society. One of the ablest advocates of the cause wrote in favor of nationalizing the land, and remodelling the currency; he also proposed a system of state loans for the assistance of laborers who desired to become capitalists, and national marts for the exchange of wealth on terms of equity and justice. Pressed a little further, these views would have developed into communism; but so far as we are aware, most chartists held so strongly the doctrine of *individual* rights, that they were not likely to subordinate *man* to *society*. See COMMUNISM: SOCIALISM. The object aimed at by the majority, was merely the extension of the franchise to the masses, in the belief that they would use it wisely and honestly, and put an end to what they considered the selfish and interested rule of classes who had long monopolized the control of the state. The opponents of C. answered that if the question was argued as one of right, it would go far beyond the conclusions which the chartists had reached. The *right* appertained to women as well as to men, and there was no just reason why sane persons under 21 should be deprived of it. It would also, they maintained, give all power to the most ignorant classes of the community, and thus subject intelligence to brute force. Government existed for the benefit of society, and ought, as far as possible, to depend on the wisdom, and not on the mere number of the people. Then if representation depended upon taxation, it should vary in proportion to the taxes paid. Finally, they denied that men *as such* had a right to vote; their right was to be well governed, and universal suffrage was more likely to destroy society than to confer happiness or insure justice.

The cause which put an end to C. as an organization was undoubtedly the improvement in the circumstances of the people which followed the repeal of the corn laws. Since then, the chief points of the charter have actually become law. A property qualification is no longer necessary in a representative; the reform acts of 1867–8 have virtually established manhood suffrage; and the act of 1872 gave vote by ballot. The efforts of the majority of those who live by manual labor are now directed toward securing, by trades-unions and other means, a larger share than formerly in the profits of industry.

CHARTRES, *shârt'r:* city of France, dept. of Eure et-Loir, 47 m. s.w. of Paris; built partly at the base and partly on the declivity of a hill overlooking the river Eure, which is here divided into two channels, one flowing within, and the other without the ramparts which are converted into agreeable promenades. C. is a very ancient city. Under the Roman rule it was called *Autricum*, and remains of Roman antiquity are still found. C. consists of an upper and lower town, connected by streets almost inaccessible to carriages. The upper town has some good streets, but the lower is ill built. The houses are old, and many of them of wood, with their gables to the street. The cathedral, one of the largest and most imposing ecclesiastical structures in Europe, with its lofty spires, one of them towering to a height

of more than 400 ft., crowns the top of the hill. It has no less than 130 painted-glass windows, the workmanship of which is unsurpassed, if indeed equalled in France. The church of St. Pierre, and the obelisk to the memory of General Marceau, are also objects of interest. The weekly corn market of Chartres is one of the largest in France, and is remarkable as being under a corporation of women who contrive to get through all the business most satisfactorily in less than an hour. It has manufactures of woolen, hosiery, and leather. Pop. 23,000.

CHARTREUSE, La Grande, *lâ grŏngd shâr-trėz':* celebrated monastery in France, dept. of Isère; 13 m. n.n.e. of Grenoble, in the wild and romantic valley of the Guiers nearly 4,000 ft. above the sea. It is surrounded by the mountain-forests of the Alps; and the route to it is very picturesque, through a mountain-gorge, down which a rapid river dashes far below the traveller, while above him rise precipitous and foliage-lined rocks, some hundreds of feet in height. The convent is a huge ungainly structure, dating mostly from the 17th c., earlier buildings having been destroyed several times by fire. The convent owes its origin to St. Bruno, who settled a little higher up the mountain in 1084, giving the name of the place, Chartreuse, to his order. The monks had at one time considerable property, but they were despoiled at the Revolution of 1789.

CHARTULARY, *chârt'ū-lėr-ĭ,* or Cartulary (q.v.): collection of charters. So soon as any ecclesiastical or secular body came to be possessed of a considerable number of charters, obvious considerations of convenience and safety would suggest the advantage of having them classified and copied into a book or roll. Such book or roll has generally received the name of a chartulary. Mabillon traces chartularies in France as far back as the 10th c., and some antiquaries think that they were compiled even earlier. But it was not until the 12th and 13th c. that chartularies became common. They were kept not only by all kinds of religious and civil corporations, but even by private families. Many have been printed, and their contents generally are of great value in historical, archæological, and genealogical inquiries.

CHARWOMAN, n.: see under Char 3.

CHARY, a. *chār'ĭ* [AS. *cearig,* careful; Dut. *karigh,* sparing, niggard; Ger. *karg,* niggardly; comp. Gael. *deire* =*jāry,* backward, behind—*lit.,* keeping behind either in words or deed]: reluctant; cautious; frugal; careful. Char'ily, ad. *-lĭ,* cautiously and reluctantly. Char'iness, n. caution; nicety.

CHARYB'DIS: see Scylla and Charybdis.

CHAS'CA, the name under which the ancient Peruvians adored the planet Venus.

CHASCH'ISH: see Hemp, Indian.

CHASE, n. *chās*—sometimes spelled CHACE [F. *chasser;* OF. *chacier*, to hunt—from mid. L. *captiārĕ*, to chase, to hunt wild beasts; Sp. *cazar*, to hunt]: the hunting of wild beasts; eager or vehement pursuit; an earnest seeking after, as pleasure, fame; the thing sought for or hunted; open ground or retreat for the larger game; the pursuit of an enemy; vessel pursued by another at sea; in *OE.*, a term at the game of tennis: V. to hunt wild beasts; to pursue eagerly; to drive away; to follow eagerly after, as pleasure, profit. CHA'SING, imp. CHASED, pp. *chāst.* CHA'SER, n. *-sėr*, one who. CHASE'ABLE, a. *-ă-bl*, that may be chased. CHACE-GUN, a gun at the bow or stern of a vessel. BOW-CHASER, gun on a vessel pointing ahead. STERN-CHASER, gun on a vessel pointing astern.

CHASE, n. *chās* [F. *châsse*, a shrine, a reliquary—from L. *capsa*, a box, a case (see CHASE 2)]: an iron frame in which to confine types; the part of a smooth-bore gun between the ring in front of the trunnion and the neck-molding.

CHASE, v. *chās* [F. *châsse*, a shrine for a relic—from L. *capsa*, a case; the thing wherein another is *enchased;* contr. of *enchasc*]: to work or engrave gold, silver, bronze, or other metal, as silversmiths do, partly engraved and partly in relief. CHAS'ING, imp.: N. the art of engraving or representing figures on metals. CHASED, pp. *chāst. Note.*—F. *enchasser* signifies 'to set a jewel,' and as the setting was commonly of ornamental work, the Eng. *chasing* has come to signify 'embossed jeweller's work.'—*Wedg.* Chasing was called *cœlatura* by the Romans; and the term is expressly limited by Quintilian to working in metal. The same art, when exercised on wood, ivory, marble, precious stones, or glass, was called *sculptura:* see CARVING. Iron was sometimes, though rarely used, silver having been always the favorite for this purpose. Closely connected with, but still distinguished from chase, is the art of stamping with the punch which the Romans designated by *excudere.* The Greek *toreutike* is usually supposed to correspond to chase, but this is not free from dispute. The art was known at a very early period as may be inferred from the shield of Achilles, the ark of Cypselus, and other productions of the kind. Such portions of the colossal statues made by Phidias and Polycletus, as were not of ivory, were produced by the toreutic art. The statue of Minerva was richly adorned in this manner. Besides Phidias and Polycletus, Myron, Mys, and Mentor were celebrated toreutic artists in antiquity, and among many moderns the most famous is Benvenuto Cellini (q.v.).

CHASE, ANN, American patriot: b. Ireland 1809; d. Brooklyn, 1874, Dec. 24. She came to the United States in 1818; settled in New Orleans in 1832; removed to Tampico, Mex., in the following year, where she married Franklin Chase, United States consul, in 1836. During the war with Mexico, in the absence of her husband, she remained at the consulate to protect the American records. On one

occasion a mob attempted to pull down the American flag floating over the consulate, but she protected it with drawn revolver, and declared that the flag should not be touched except over her dead body. Later through her efforts the city of Tampico was taken.

CHASE, F. H., English biblical scholar: b. 1853, Feb. 21. He was educated at Christ's College, Cambridge, took orders in the English Church, and was successively curate of Sherborne, Dorset, 1876–9, and St. Michael's, Cambridge, 1879–84. He was lecturer in theology at Pembroke College 1881–90, and at Christ's College 1893–1901, and has been principal of the Clergy Training School at Cambridge from 1887, Norrisian professor of divinity from 1901, and president of Queen's College from the last named year, also. He has published *Chrysostom* (1887); *The Lord's Prayer in the Early Church* (1891) *Old Syriac Element in Codex Bezæ* (1895); *Syro-Latin Text of the Gospel* (1897); *Credibility of the Book of Acts* (1901); etc.

CHASE, George, American lawyer: b. Portland, Me., 1849, Dec. 29. He graduated valedictorian at Yale in 1870, and at Columbia Law School in 1873. He was assistant professor of municipal law at Columbia University 1874–8; professor of criminal law, torts and procedure 1878–91; member of the university council 1890–1. In 1891 the New York Law School was chartered through his efforts, and he was chosen its dean, a position he still holds. Publications: *The American Student's Blackstone* (1876); editor of *Ready Legal Adviser* (1881); of Stephens' *Digest of the Law of Evidence* (1886); *N. Y. Code of Civil Procedure;* Chase's *Cases on Torts.*

CHASE, Irah, d.d.: 1793, Oct. 5—1864, Nov. 1; b. Stratton, Vt. He graduated at Middlebury College, 1814, studied divinity at Andover, entered the Baptist ministry 1817, was for a year a missionary in western Va., and became, 1818, a prof. in a theol. seminary at Philadelphia, soon removed to Washington. He bore a leading part in establishing the Theol. Institution at Newton Centre, Mass., 1825–6, and was its first prof. There he remained teaching Biblical theol. and eccles. hist. till 1845. While abroad, 1830, he was instrumental in founding a Baptist mission in France. In later years he published a *Life of Bunyan, The Design of Baptism, Infant Baptism an Invention of Man, The Constitution of the Holy Apostles, revised from the Greek,* and sundry sermons, essays, and review articles. He died at Newtonville, Mass.

CHASE, Philander, d.d., ll.d.: 1775, Dec. 14—1852, Sep. 20; b. Cornish, N. H.: first Prot. Episc. bishop of Ohio and Illinois, and uncle of Chief-Justice Chase. Disabled from farm work by an injury, he graduated at Dartmouth 1796, met with and studied the Book of Common Prayer, was ordained deacon in New York 1798, May 10, priest 1799, Nov. 10. Atfer several years' service as missionary in N. Y. he went to New Orleans, 1805, and organized an Episcopal church there. He was rector of Christ

Church, Hartford, 1811–17; then went to Ohio as an ecclesiastical pioneer. Consecrated bp. 1819, Feb. 11, he continued his zealous labors, raised $30,000 in England 1823, bought 8,000 acres, and founded Kenyon College and Gambier Theol. Seminary. Trouble arising with some of his clergy about the funds which he had collected, he resigned 1831, Sep., moved to Mich., was made bp. of Ill. 1835, Mar. 8, visited England again and secured $10,000, with which he founded Jubilee College at Robin's Nest, Ill.: here he lived thenceforth. He published *A Plea for the West* (1826); *The Star in the West, or Kenyon College* (1828); *Defense of Kenyon College* (1831); and *Reminiscences*, an autobiography in two vols. (1847).

CHASE, Pliny Earle, American scientist: b. Worcester, Mass., 1820, Aug. 18; d. Haverford, Pa., 1886, Dec. 17. He graduated at Harvard, 1839, taught in Philadelphia and engaged in business for many years, but employed his leisure in physical and philological studies. In 1864 the Magellanic gold medal of the American Philosophical Society was awarded him for his *Numerical Relations of Gravity and Magnetism*. The results of other mathematical and physical researches were published from time to time in the *Proceedings* of the American Philosophical Society, and brought him a wide reputation, both in the United States and abroad, as a man of unusual scientific powers and attainments. In 1871 he became a member of the faculty of Haverford College, Pa., and for a long time was professor of philosophy and logic. He published *Elements of Meteorology* (1884).

CHASE, Salmon Portland: 1808, Jan. 13—1873, May 7; b. Cornish, N. H.: Chief-Justice of the United States 1864–73. He was sixth in descent from Aquila Chase, who emigrated from Cornwall to Newbury, Mass., 1640. His father removed to Keene, N. H., 1816, lost his property in a glass-factory, and soon died. Chase was sent, 1820, to his uncle, the bishop of Ohio, returned to N. H. 1823, entered Dartmouth College as a junior, and graduated 1826; he then opened a school at Washington, read law under Wirt, was admitted to the District of Columbia bar 1829, and settled at Cincinnati 1830. His first years of practice were full of the usual difficulties and discouragements, but his edition of the Ohio Statutes in three vols. 1832, with notes and a sketch of the history of Ohio, won him reputation; he was appointed solicitor for the United States Bank, 1834, and soon was fully occupied. His position regarding slavery was early taken and defined 1837; in defending a woman claimed as a fugitive slave, he denied the constitutionality of the law of 1793, and the right of congress to impose duties in such cases on state officers. Also, in 1837, as counsel for James G. Birney, prosecuted for harboring a slave, he maintained that slavery was sectional and dependent on state laws, whereas freedom was national, universal, based on natural right; hence that a slave brought into a free state by his master was thereby freed. These ideas he further expounded, 1842, in defending John Van

Zandt, a Ky. abolitionist, who had removed to Ohio and aided slaves to escape. The case went up to the United States supreme court, where Mr. Chase was joined by William H. Seward. He was the chief founder of the liberty party, organized at Columbus, 1841, Dec., and wrote the address setting forth its principles and aims. At the national convention at Buffalo, 1843, he wrote most of the platform and favored moderate measures; at one in Cincinnati, 1845, he gave a history of slavery and argued for an anti-slavery party; at the second national convention, 1847, he advised a waiting policy. Another at Buffalo, 1848, over which he presided, and whose platform he drew up, nominated Van Buren and Charles F. Adams as free-soil candidates. Mr. Chase was elected to the United States senate 1849, Feb. 22, by democratic votes, but left that party when its leaders in Ohio sanctioned the Baltimore platform of 1852 with its approval of the Compromise Acts of 1850, and prepared a platform which was adopted in substance by the independent democratic convention at Pittsburgh, 1852. In the senate his course was consistent and unmistakable; he opposed Clay's Compromise, 1850, Mar., moved an amendment against the introduction of slavery in the territories, and others to modify the fugitive-slave law; he fought the Kansas-Nebraska Bill, 1854, and wrote an appeal to the people against it; he supported the Homestead Bill, the cheapening of postage, and the grant toward the construction of the Pacific railroad. His anti-slavery measures were of course defeated, but they bore their part in educating the nation. Mr. Chase was governor of Ohio for two terms, 1856–60, being re-elected by a very large vote, 1857; in this office he protected the state credit and compelled the resignation of a defaulting treasurer. He withdrew his name as a presidential candidate at the republican convention 1856, and supported Fremont; at Chicago, 1860, he received 49 votes on the first ballot. At the Peace Conference, 1861, Feb., he proposed compensation to the owners of fugitive slaves. Again elected to the senate, he gave up his seat to become sec. of the treasury. Here his great ability and energy found full occupation. The treasury was empty, the govt. credit below par, and civil war about to entail its enormous expenses. As congress would not resort to direct taxation, he met the crisis by extensive loans, on which the interest, being paid in gold, which then commanded an immense premium, was necessarily high; by an increase of duties on imported goods; by the issue of greenbacks, 1862, Feb., acquiescing in their character as legal tender, which originated with congress; and by the system of national banks, 1863, Feb., which superseded the state banks. These measures were freely criticised, but as war measures they carried the country through a terrible emergency. When Mr. Chase resigned his post 1864, June 30, the national debt was $1,740,690,489, to be increased some $500,000,000 by the remaining expenses of the war. His name was pushed for a presidential nomination, but in vain.

1864, Dec. 6, Pres. Lincoln appointed him chief-justice, to succeed Roger B. Taney. Here he considered in an independent spirit many questions of reconstruction, and decided against the constitutionality of the legal-tender notes, to which he said he had agreed merely as a temporary necessity. In matters of technical law he trusted largely to his associates, as became one so long absent from the bar and engrossed by active political duties. He presided over the senate in the impeachment of Pres. Johnson 1868—the only case of the kind in United States history—and favored the result of acquittal. Gradually alienated from his party and disapproving its course in congress, he was suggested as a democratic candidate for the presidency 1868; he answered certain questions of the chairman of the national committee and wrote a declaration of principles, but received only four votes. He opposed Gen. Grant's re-election 1872. His health was much impaired by a paralytic stroke 1870, June, though he still attended the sessions of his court. He died in New York. His remains were taken, 1886, Oct., from Washington to Spring Grove cemetery, Cincinnati. His *Life* has been written by J. W. Schuckers (N. Y. 1874), and by R. B. Warden (Cincin. 1874).

CHASE, Samuel: 1741, Apr. 17—1811, June 19; b. Somerset co., Md.: signer of the Declaration of Independence, and associate justice of the U. S. supreme court. He was educated by his father, the Rev. Thomas Chase, studied law at Annapolis, was admitted to the bar 1761, was early sent to the legislature, and won note as an eloquent speaker and ardent lover of liberty, opposing the Stamp Act and the colonial governor. He was a member of the continental congress 1774–78, and there denounced Dr. Zubly of Georgia as a traitor, and drove him to flight. Sent to Canada, 1776, on a mission with Franklin and the two Carrolls, he returned in time to influence the hesitating opinion of Md. and to sign the Declaration. After serving industriously on committees and practicing a few years at Annapolis, he went abroad as a state agent to recover funds deposited in the Bank of England, succeeded in procuring the payment of $650,000, and was thanked by the Maryland legislature. He removed to Baltimore 1786, and was a member of the Maryland convention to ratify the United States constitution, which (though a Federalist) he thought not democratic enough. He became chief-justice of a new criminal court 1788, and chief-justice of Maryland 1791. During a riot, 1794, he offered to serve as a sheriff's posse when no one else would, and was presented by the grand jury, whom he told to keep to their province. Washington appointed him a justice of the supreme court 1796, Jan. 27. For his course in two political trials he was impeached, 1804, at the instance of John Randolph, but discharged by the senate on a divided vote 1805, Mar. 5. He was a learned lawyer, a man of bold, impetuous, irascible, but lofty character, and a lover and practicer of free speech.

CHASE, Thomas: American educator: b. Worcester, Mass., 1827, June 16; d. Providence, R. I., 1892, Oct. 5. He was a brother of Pliny E. Chase (q.v.). In 1855 he became professor of philology and classical literature at Haverford College, near Philadelphia; in 1875 its president. Among his publications are: *Hellas: Her Monuments and Scenery* (1861); an address on *Liberal Education: Its Aims and Methods.*

CHASE, William Henry: American military officer: b. Massachusetts 1798; d. Pensacola, Fla., 1870, Feb. 8. He was graduated at the United States Military Academy, became first lieutenant of engineers in 1819, captain in 1825, and major in 1838. He was engaged in repairing Fort Niagara in 1817–18; as superintending engineer for many important works in 1819–28; and had charge of the defenses in Pensacola harbor, Fla., 1828–54. He superintended the improvements of Mobile Bay; as senior engineer officer had charge of all the fortifications and river and harbor improvements at the mouth of the Mississippi; and took an influential part in all projects connected with the development of the region around Pensacola. At the outbreak of the Civil War he entered the Confederate army, and was prominent in the seizure of the Pensacola navy yard.

CHASE, William Merritt: American artist: b. Franklin, Ind., 1849, Nov. 1. He studied painting in oil at the National Academy in New York and subsequently in Europe with Piloty. He has made a specialty of portraits and figure pieces, winning celebrity with *Ready for the Ride; The Apprentice;* and *The Court Jester;* and portraits of American ladies. He was appointed instructor at the Brooklyn Art School in 1881 and elected a National Academician in 1890. In 1896 he conducted an art class to Madrid.

CHASIDIM, *kăs'ĭ-dĭm* ('Pietists'): name anciently denoting a whole class of Jewish sects. After the Babylonian captivity the Jews, with regard to their observance of the law of Moses, were divided into two classes—*Chasidim* and *Zadikim.* When the so-called great synagogue was commissioned by the Persian government to draw up a code of civil and religious laws for the emigrant Jews returning to settle in their native land, several innovations were made on the Mosaic law. Those who accepted these innovations were styled the Chasidim; while those who rejected them were styled or styled themselves, the Zadikim, or 'upright,' because they adhered strictly to the law given by Moses, without observing any of the additions to it. The Chasidim branched forth into several sects, all holding, in connection with the written law, traditions which they believed to possess a divine sanction equally with that law. The Pharisees, so often mentioned in the New Testament, formed an early sect among the Chasidim, while from the Zadikim sprang forth the Hellenistic Samaritans, Essenes, Sadducees, etc. Afterward the Chasidims, or Pharisees, split into Talmudists, Rabbinists, and Cabbalists, some of

whom underwent still further supervision.—The modern Chasidim are not, like those in the times of the Maccabees, marked by any peculiar spiritualistic tendency in religion, but rather by a strict observance of certain traditional forms, and a blind subservience to their teachers. Their doctrine was promulgated in the middle of the 18th c. by Israel of Podolia, called *Baal-Shem* ('Lord of the Name,' so called because he professed to perform miracles by using the great cabalistic name of the Supreme Being). Though condemned by the orthodox rabbis this new teacher had great success in Galicia, and when he died (1760) left 40,000 converts. They are now broken into several petty sects; their religion is utterly formal, and its ceremonies are coarse and noisy.

CHASLES, *shâl,* Michel: 1793, Nov. 13—1880, Dec. 19; b. Epernon: French mathematician. He studied at the polytechnic school of Paris, to which, after some years at Charenton, he returned 1841 as prof. of geodesy and mechanics. The chair of higher geometry in the faculty of sciences was founded for him 1846, and he was admitted to the Acad. 1851. He published a work of geometry 1837, a history of arithmetic 1843, a treatise on higher geom. 1852, and one on conic sections 1865; two of these were translated into German. Chasles was beguiled, 1867, into paying 140,000 francs for a marvellous collection of letters, supposed to have been written by Julius Cæsar, Dante, Shakespeare, and other illustrious persons; on the strength of some of these he claimed Sir I. Newton's discoveries for Pascal. Several academicians were deluded by this huge fraud, the perpetrator of which, Irène Lucas, received a two years' sentence 1870, Feb. 23. Chasles died in Paris.

CHASM, n. *kăzm* [Gr. and L. *chasma,* a gaping or wide opening]: a deep gap or opening in the earth, or between rocks; a void space. Chasmed, a. *căzmd,* having gaps or deep openings.

CHASSAIGNAC, *shă-sān-yâk,* Charles Louis: American physician: b. New Orleans, 1862, Jan. 5. He was graduated at the medical department of the University of Louisiana; and was president and Professor of Genito-Urinary Diseases at the New Orleans Polyclinic in 1902. He was editor of the *New Orleans Medical and Surgical Journal;* president of the Orleans Parish Medical Society; vice-president of the Louisiana State Medical Society; one of the founders and president of the New Orleans Sanitarium and Training School for Nurses; etc.

CHASSE, *shăs-sā′:* music composed in imitation of the chase, and performed chiefly by horns, occasionally combined with other wind instruments. Its movement is in $\frac{6}{8}$ time. The best specimens are an overture by Mehul, and a chasse for the piano-forte by Kreutzer.

CHASSE, *shâ-sā′,* David Hendrik, Baron: 1765, Mar. 18—1849, May; b. Tiel: began his military career when but ten years of age, became lieut. 1781, cap. 1787. After

the revolution of that year, Chasse, as siding with the humbled Dutch patriots, took French service; was appointed lieut.-col. 1793; and, two years later, found himself marching toward the Netherlands under the command of Pichegru. He afterward fought with the French in Germany and Spain, gaining great distinction and the appellation of *Général Bayonnette*. As lieut.-gen. of the Dutch forces, 1815, Chasse added to his laurels on the field of Waterloo. After the peace he was made gov. of Antwerp, 1830, and bravely defended it against the united Belgians and French 1832, Nov. 29–Dec. 23, when he was forced to surrender.

CHASSEPOT, *shâs-pō′:* a breech-loading rifle invented by Antoine Alphonse Chassepot, 1863, and introduced after the Prussian needle-gun had been employed successfull, in the war with Austria 1866; the French infantry and part of the cavalry were then armed with it, and used it against the Germans 1870–1. It has four grooves, and allows twelve discharges to the minute. The fulminate is a paper wad forming the rear of the cartridge envelope, which is of silk or linen, with a calibre of .433 inch. The gas-check is a cylindrical ring of vulcanized India rubber, which is pressed against the surface of the chamber when the explosion occurs. This gun has been criticised as too fragile, expensive, easily fouled, and difficult to clean; some of these drawbacks have been removed or diminished in its later forms. Its inventor was born 1833, employed in the workshops of St. Thomas at Paris, made director there 1864, and afterward attached to the national manufactory of arms at Chatellerault near Poitiers. He spent years of study on the gun, patented it, received the cross of the Legion of Honor 1866, maintained his right against another claimant 1869, and drew a large income from his invention. He died at Gagny, in the Seine-et-Oire, 1905, Feb. 14.

CHASSEURS, n. *shăs-sėrs′* [F. *chasseur*, a huntsman—from *chasser*, to hunt (see CHASE 1)]: horse or foot soldiers trained for rapid movements; name of two important forces in the French army. The mounted chasseurs (*C.-à-cheval*) are a body of light cavalry, designed for service in advance or on the flanks of the army, and correspond most nearly to the light horse of the British service. The name, used in this sense first in 1741, has been retained, while the force that it denotes has undergone many alterations in organization and equipment. In 1831, a body of cavalry was raised for service in Africa, mounted on Arab horses, and with a distinct uniform. These have since become famous as the *Chasseurs d'Afrique*. After the reorganization of the French army, 1873, the effective army contained 14 regiments (subsequently increased to 20) of Chasseurs-à-cheval, besides four regiments of Chasseurs d'Afrique.—The infantry Chasseurs (*C.-à-pied*) are a light-infantry force in many respects corresponding with the cavalry chasseurs, and like them intended for detached service (like the rifle corps in the English army). The French are believed to have adopted the idea of such a force of sharpshooters from the *Jäger* (the German word corresponding to chasseurs, or

*hunters*) in the German armies. First used in the thirty years' war, the Jäger derived their name from the fact that they were chiefly drafted from among mountaineers and inhabitants of forest regions. They have always been regarded as a valuable contingent in the Prussian and Austrian armies, or even constitute the entire force of light infantry. In the German army, there are 26 battalions (near 15,000 men) of this force; in the Austrian service, upward of 20,000 officers and men. In France the equipment of the chasseurs differed little from that of the other infantry; it was not until the formation in 1838 of the *Chasseurs de Vincennes*, that the experiment of a specially-armed force of sharpshooters was fairly tried. The fame of the chasseurs de Vincennes for rapidity and precision of movement, as well as for the accuracy of their fire, soon evinced the importance of this branch of the infantry; and at present there are 30 battalions of chasseurs-à-pied in the French army.

CHASTE, a. *chāst* [F. *chaste*—from L. *castus*, pure; It. *casto*]: pure from sexual commerce; true to the marriage vow; pure; undefiled; in *language*, free from barbarous or affected words and phrases; refined in expressions; in *works of art*, pure in taste or design; not vulgar in style. CHASTE'LY, ad. *-lĭ*, without contamination; in a pure manner. CHASTE'NESS, n. the state of being chaste; purity in taste or design. CHASTITY, n. *chăs'tĭ-tĭ* [F. *chasteté*]: purity of body or of speech.

CHASTELARD, *shât-lâr'*, PIERRE BOSCOBEL DE: 1540–1563; b. Dauphiny, of the Bayard family. A pupil of Ronsard and then a page of the constable Montmorency, he went with the train of Marshal Damville to Scotland, returned to Paris, and went again to the n. with letters of recommendation to the Scottish Queen Mary. With her the youth became infatuated, and much philandering ensued; Mary accepted his erotic verses, encouraged his advances, and showed pleasure in his society. Fired by his passion, and little deterred by prudence or principle, he concealed himself beneath her couch, was found there by her maids of honor, pardoned, and restored to favor. For a repetition of the offense he was promptly sentenced and hanged next morning. He read Ronsard's *Hymn of Death* on his way to the scaffold; his last words apostrophized his 'cruel queen,' with or without the famous addition, 'Thou killest me, and yet I cannot cease to love thee.' This fatal passion, Chastelard's only title to remembrance, is made the most of in Mr. Swinburne's tragedy, *Chastelard*.

CHASTELER, *shât-lā*, JEAN GABRIEL, MARQUIS OF: b. 1763; d. Venice 1825, May 7. He was grandee of Spain of the first rank, Austrian master of ordnance or general of artillery, military governor of Venice, and descended in a collateral line from the dukes of Lorraine. He received his first education at Metz in the Collége de Fort. In 1776 he entered the Austrian service. After having served against the Turks, by whom he was severely wounded, he displayed his zeal for the house of Austria in the

disturbances in the Netherlands. In 1796–7 he was employed in the negotiations of his court in Poland and Russia; was afterwards with Suwaroff in Italy, where he distinguished himself in several engagements with the French armies. In 1808, with Hormayr, he was the soul of the famous insurrection in the Tyrol, and all the political as well as military events which were connected with it. Napoleon, enraged at the surrender of 8,000 French and Bavarians at Innsbruck, issued a proclamation at Enns, in which, a certain Chasteler who calls himself a general in the Austrian service, but who is the leader of a band of robbers, and the author of the murders committed upon the French and Bavarian prisoners, as well as the instigator of the Tyrolese insurrection,' is declared an outlaw, and ordered to be brought before a court-martial and shot within 24 hours. The Emperor Francis commanded that an order which violated all international laws, and which was the more censurable as Chasteler had taken particular care of the prisoners and the wounded should be met by retaliation. The Bavarian army, under the command of the marshal-duke of Danzig, entered Tyrol. Chasteler fearlessly encountered it, but his army was routed May 13. After the close of the war he received several appointments, and in 1814, Dec., was made governor of Venice.

CHASTELET, *shât lā*, Gabrielle Emilie Breteuil, *bre-te-yĕi*, Marquise du: b. Picardy 1706; d. Luneville 1749. She was of an ancient family, was taught Latin by her father, Baron Breteuil, and was well acquainted with that language, but her favorite study was mathematics. She had a sound judgment and much taste, loved society and the amusements of her age and sex, but after the publication of the *Philosophical Letters* by Voltaire had roused the Jesuits' criticism against him, she abandoned all these pleasures, and in 1733 retired with him to the dilapidated castle of Cirey, situated in a dreary region on the borders of Champagne and Lorraine. She embellished this residence, formed a library, collected instruments, etc. Cirey was often visited by the learned,—by Maupertuis, John Bernouilli, etc. Here the marchioness learned English of Voltaire in the space of three months, and read with him Newton, Locke, and Pope. She also wrote an analysis of the system of Leibnitz, and translated Newton's *Principia* with an algebraic commentary. Voltaire lived six years with her at Cirey, where they employed their time in the study of science, and in getting up lovers' quarrels for the pleasure of patching them up again. At the end of this time she went to Brussels to prosecute a lawsuit, which was terminated by an advantageous compromise, brought about by Voltaire. She also carried on a correspondence with the German philosopher, Wolf, until her death. Her *Traité de la Nature du Feu* obtained the prize of the Parisian Academy of Sciences, and is published in their collections.

CHASTELLUX, *shâ-tā-lüks′*, François Jean, Marquis de: 1734–88, Oct. 28; b. Paris. He entered the army at the age of 15, was a col. in the German war 1754–63, and maj.-gen., 1780, in Rochambeau's army in America, where he gained Washington's friendship and visited Jefferson at Monticello. Returning to France he became field-marshal and an academician. His reputation as a writer was made by *De la félicité publique* (1772), which breathed the spirit of Condorcet and the encyclopedists, and was thought by Voltaire superior to Montesquieu's *L'Esprit des Lois*. His journal of American travels and experiences appeared in 2 vols. 1786, as *Voyage dans l'Amérique Septentrionale dans les Années* 1780–82, in an edition of but 24 copies, and in a translation by Geo. Grieve at London 1787. In that year he published a discourse on the advantages and disadvantages resulting to Europe from the discovery of America, which La Harpe called his best book. This, and his earlier verses addressed to the U. S. armies, were translated by Col. David Humphreys. Chastellux married an Irish lady, Miss Plunket, 1787. He died in Paris.

CHASTEN, v. *chās′n* [F. *châticr*—from OF. *chastier*, to correct—from L. *castigāre*, to correct]: to correct; to punish for the purpose of reclaiming an offender; to afflict in any way; to purify. Chastening, imp. *chās′nĭng*. Chastened, pp. *chās′nd:* Adj. corrected; softened down. Chas′tener, n. *-nċr*. Chastise, v. *chăs-tīz′*, to punish or correct with the rod; to inflict a pain as punishment for an offence; to correct or purify in any way. Chasti′sing, imp. Chastised′, pp. *-tīzd*. Chastiser, n. one who. Chastisement, n. *chăs′tĭz-mĕnt*, correction; punishment.—Syn. of 'chasten': to chastise; purify; punish; correct; discipline; afflict.

CHASTE TREE: see Vitex.

CHASUBLE, n. *chăz′ū-bl*, or Ches′ible or Ches′able [F. *chasuble*—from mid. L. *casibŭla*, a little mantle, a dim. of mid. L. *casŭla*, a mantle]: uppermost or last garment put on by priests in the Rom. Cath. Church, when robed for the celebration of the mass. It was called also 'the Vestment,' and under that name seems occasionally to have been used in the English Church after the reformation. Originally it covered the priest from head to foot, like a little house, whence some writers think it had its name of *casula*. In more recent times, at least, it was made of velvet. It was of an elliptical shape, like a *vesica piscis*, with a hole in the middle for the head; it had no sleeves. When put on, it showed two peaks, one hanging down before; another, on which a cross was embroidered, hanging down behind. According to Hildebert the chasuble signified good works; according to Alcuin, charity; according to another writer, the unity of the faith. Durand makes one peak the symbol of love to God, the other peak the symbol of love to the neighbor. In France, the press or wardrobe in which chasubles were kept was called the *chasublier*.

CHAT, n. *chăt* [a modern abbreviation of OE. *chateren*,

to chatter: It. *gazzolare*, to chat or chatter: Mal. *kata*, to speak: an imitative word]: familiar talk; idle conversation: V. to converse in a familiar, easy way; to talk idly. CHAT'TING, imp. CHAT'TED, pp. CHAT'TY, a. *-tĭ*, talkative; conversing pleasantly and freely. CHATTER, v. *chăt'tĕr*, to converse or make a noise as birds do; to utter sounds rapidly, as a monkey; to talk idly or carelessly; to prattle; to rattle the teeth, as in shivering: N. rapid, inarticulate sounds, as of a monkey; idle, voluble talk; a genus of small birds, including the stone-chat. CHAT'TERING, imp.: ADJ. uttering rapid and inarticulate sounds; talking rapidly and indistinctly: N. the utterance of rapid and inarticulate sounds; rapid and indistinct talking. CHAT'TERED, pp. *-tĕrd*. CHAT'TERER, n. one who. CHAT'TERBOX, n. one that talks idly and incessantly.

CHAT, *chăt* (*Saxi'cola*): genus of small birds of the very numerous family *Sylviadæ* (q.v.), distinguished by a bill slightly depressed, and widened at the base. They have rather longer legs than most of the family. They are lively, flitting about with incessant and rapid motion in pursuit of the insects on which chiefly they feed. They are found in Europe, Asia, Africa, and New Holland. Three species are British—the stonechat, whinchat, and wheatear.—The yellow-breasted C. of the United States (*Icteria polyglotta*) is a larger bird, and belongs to the family *Turdidæ* or *Merulidæ*.

CHATEAU, n. *shă tō'* [F. *château*—from OF. *chastel*—from L. *castel'lum*, a castle]: a castle; a country-seat; a term, or its equivalents, *chatel*, or *castel*, entering as a component part into many names of places in France; plu. CHATEAUX', *-tōz'*. CHATELET, n. *shăt'ĕ-lā*, a little castle; the common jail and session-house in Paris.

CHATEAUBRIAND, *shâ-tō-bre-ŏng'*, FRANÇOIS AUGUSTE, Vicomte DE: 1769, Sep. 4—1848, July 4; b. St. Malo, Bretagne: distinguished French author. He received his early education in the college at Rennes. While travelling in N. America, 1790, he accidentally read in an English newspaper the account of the flight and arrest of Louis XVI. He immediately returned to France, intending to fight against the republic; but being seriously wounded at the siege of Thionville, 1792, Sep., he escaped to England, where he lived in such poverty that he was compelled to make translations for the book-sellers, and to give lessons in French. In 1797, he published his first political essay, *Sur les Révolutions Anciennes et Modernes, considérées dans leurs Rapports avec la Révolution Française* (2 vols., London), a republican and sceptical work, the outcome of hardship, poverty, and sorrow. His skepticism soon vanished, but republican impulses continued to flash out at intervals during the whole of his strangely checkered, inexplicable, and inconsistent career. In 1800, C. returned to Paris, and wrote for the *Mercure de France*. In this journal, he first printed his tale of *Atala* (1801), with a preface lauding the first consul, Bonaparte. Its success was remarkable, but nothing to the miraculous enthusiasm excited by his *Génie*

*du Christianisme* (1802), a work exactly suited to the jaded skepticism of the age, and also in accordance with the policy of the first consul, who was then concluding the concordat with the pope, and wished to make the Rom. Cath. priesthood subservient to his measures. Bonaparte, therefore, appointed C. secretary to the embassy in Rome, and, 1803, sent him as ambassador to the little republic of Valais. On the execution of the Duke d'Enghein, 1804, Mar. 21, C. resigned in disgust. In 1806, he commenced his pilgrimage to the Holy Land, visited Greece, Palestine, Alexandria, and Carthage, and returned through Spain to France, 1807, May. From this period to the fall of Napoleon, he lived privately, publishing only two works of any value—*Les Martyrs*, and the *Itinéraire de Paris à Jérusalem*. In 1814, his eloquent brochure, *De Bonaparte et des Bourbons*, excited such an attention, that Louis XVIII. declared it was worth an army of 100,000 men in favor of legitimacy.

After the battle of Waterloo, C. returned to Paris, where he was made peer and minister of state. Gradually his monarchial zeal subsided, and in his address, *De la Monarchie selon la Charte*, delivered in the chamber of peers, he gave expression to such liberal tendencies as offended the king, who erased his name from the list of his counselors. Soon, however, he appeared again as an ultra-royalist; and at the baptism of the infant Duke de Bordeaux, C. presented to the Dutches of Berry a flask filled with water from the Jordan. In 1822, he was appointed ambassador extraordinary to the British court, but was somewhat rudely dismissed from office in 1824.

In 1826, C. prepared the first edition of his collected works, for the copyright of which the publisher gave the large sum of 600,000 francs, of which C. returned 100,000. During the days of 1830, July, he was staying with his friend Madame Récamier at Dieppe; but as soon as he heard tidings of the revolution he hastened to Paris. He refused to take the oath of fealty to Louis Philippe. This political crotchetiness, which always rendered it impossible to know beforehand what course of conduct C. would adopt, is perhaps best explained by the following passage from his *De la Restauration et de la Monarchie Elective* (Paris, 1831): 'I am a Bourbonist in honor, a monarchist on grounds of rational conviction; but in natural character and disposition, I am still a republican.' In 1832, he revised a new edition of his works, and, after visiting the court of the expelled Bourbons, gave his attention to the preparation of his memoirs, intended to be published posthumously (*Mémoires d'outre Tombe*), though considerable extracts were printed during his lifetime. He also found leisure to write several other works.

C. wrote with warmth, energy, and a rich supply of imagery. Many of his descriptive passages are excellent, but his ideas want depth and coherency.—Marin, *Historie de la Vie et des Ouvrages de M. de Chateaubriand* (2 vols., Paris, 1832).

CHÂTEAUDUN, *shâ-tō-dŭng'*: town of France, dept. of Eure-et-Loir, on the Loir, a tributary of the Loir, about

26 m. s.s.w. of Chartres. The streets are straight and well built, and an old castle, with an enormous tower, overlooks the town. C. has manufactures of blankets and leather. Pop. 7,000.

CHÂTEAU-GONTIER, *shâ-tō-gōng-te-ā':* town of France, dept. of Mayenne, on the river Mayenne, here crossed by a stone bridge, 18 m. s.s.e. of Laval. C. has some good houses, but the streets are not well laid out. It has linen and woolen manufactures. Pop. 7,500.

CHATEAUGUAY, Sieur DE: see LE MOYNE, ANTOINE.

CHÂTEAUNEUF DE RANDON, *shâ-to-nĕf' deh rŏng-dōng'*: village of France, dept. of Lozère, 12 m. n.e. of Mende. A historical incident is connected with the place, which was formerly fortified. In 1380, the fortress, then held by the English, was besieged by the troops of Charles V., under the command of the gallant Du Guesclin. The English governor, sore pressed, promised to yield in 15 days if no succor arrived. In the meantime Du Guesclin died, and his successor was appointed, who, at the expiry of the 15 days, summoned the governor to surrender. He refused to yield up the keys to any but Du Guesclin; and, when informed of his death, marched out, and on bended knee laid the keys and his sword on the dead hero's bier. Pop. 500.

CHATEAUROUX, *shâ-tō-rō':* town of France, dept. of Indre, on a rising ground in the midst of an extensive plain, on the left bank of the river Indre, 166 m. s. of Paris by railway. The town, formerly dirty and ill built, has been greatly improved within the last quarter of a century. C. has not much interest for the traveller. It is a busy place, with extensive woolen factories, besides manufactures of cotton, hosiery, yarn, hats, paper, parchment, hardware, leather, etc. Some of the best iron in France is found in the vicinity. The town owes its origin to a castle built here in the 10th c. Pop. 21,000.

CHÂTEAU-THIERRY, *shâ-tō'tē-ār-rē':* town in the dept. of Aisne, France, on the Marne. Its name comes from a castle whose ruins are on a hill near by, said to have been built by Charles Martel for Thierry IV. C. was once the capital of a dist., and received the title of a duchy, 1566, from Charles IX. It was taken by the English 1429, by Charles V. 1595, by the Spanish 1591, pillaged in the wars of the Fronde 1652, and much injured 1814, when Napoleon defeated the Russians and Prussians near by, Feb. 12. C. has a tribunal of first instance, a communal college, a public library, a stone bridge with three arches, and manufactures of linen, cotton, leather, and earthenware. La Fontaine was born here; his house still stands in a street now named from him, and there is a statue to his memory. Pop. 5,347; of the commune, 6,623.

CHATELAINE, n. *shăt'ĕ-lān* [F. *châtelaine*, the lady of the castle who wore the keys at her girdle]: a chain at a lady's waist-belt from which may be suspended keys, scissors, watch, and other articles of personal convenience.

CHÂTELET, *shât-lā'* or *shâ-te-lā'*, GRAND, and PETIT: two ancient fortresses of Paris, said to have been built in Cæsar's time. The Grand C. stood on the right bank of the Seine, where is now the w. part of the Place du C.; it was restored and enlarged by Louis IX., Charles VIII., and Louis XII., and was long occupied by the counts and afterward by the provosts of Paris. As remodelled by Louis XIV., it was noted as a prison and seat of the judiciary; in 1790, it accommodated two companies of soldiers, 1,207 civil officers, and many lawyers. It was demolished 1802. The Petit C. was on the left bank of the Seine, where the Place du Petit Pont now is, and was originally one of the gates of Paris, at which tolls and excise duties were levied; it was destroyed by a flood 1296, rebuilt 1369, and torn down 1782. Similar châtelets were at Orleans and Montpellier.

CHÂTELET-LOMONT, *shât-lā'lo-mŏng'*, GABRIELLE EMILIE, Marquise DU: 1706, Dec. 17—1749, Sep. 10; b. Paris: learned Frenchwoman, notorious for her intimacy with Voltaire. She early showed aptitude for knowledge, studied Latin and Italian with her father, the Baron de Breteuil, and subsequently betook herself with zeal to mathematics and the physical sciences. Distinguished alike for beauty and talent, she soon found a host of suitors for her hand. Her choice fell on the Marquis du Châtelet-Lomont, but her marriage did not hinder her from forming a *tendresse* for Voltaire, who came to reside with her at Cirey, a château on the borders of Champagne and Lorraine, belonging to her husband. Here they studied, loved, quarrelled, and loved again, for several years. In 1747, however, poor Madame C. became 'not insensible to the brilliant qualities' of a certain M. Saint-Lambert, a capt. of the Lorraine Guards; and the result was, that the philosopher had to give place to the soldier, and content himself for the future with being the 'devoted and indulgent friend' of his former mistress. This new intimacy became fatal to Madame Châtelet. She died at Luneville, a few days after having given birth to a child. Her first writing was a treatise on the philosophy of Leibnitz. She also translated the *Principia* of Newton into French, accompanying it with algebraic elucidations. It did not, however, appear till 1756, some years after her death. Her correspondence with Voltaire is interesting; but the fact that a woman so highly gifted as Madame C., and possessing so many amiable qualities, should never have dreamed that there was anything wrong in her *liaisons*, shows with terrible conclusiveness how corrupt was that philosophic society which, in the 18th c., professed to explode superstition and enlighten France and the world.

CHÂTELLERAULT, *shâ-tĕl-rō'*: town of France, dept. of Vienne; on the river Vienne, 18 m. n.n.e. of Poitiers. A handsome stone bridge, with a massive castellated gateway, built by Sully, at one end, connects it with a suburb on the other side of the river. C., an ill-built, mean-looking town, is one of the chief seats of the manufacture of cutlery in France, and since 1820 has had a national manufactory of

swords and bayonets. Its river-port makes it the entrepôt for the produce of an extensive district. The Duke of Hamilton derives his title of Duke of Chatelherault from this place. Pop. 18,000.

CHATHAM, *chăt'am* [Saxon, *Ceteham* or *Cættham*, understood to signify the 'village of cottages']: parliamentary borough, river-port, fortified town, and naval arsenal, in the county of Kent; on the right bank of the Medway, at the upper part of its estuary, 30 m.e.s.e. of London. Pop. 78,746. Much of Chatham is ill-built and irregular. The High Street is 1¼ m. long, parallel to the river, and swarms with soldiers and Jews. The refuse timber of the dock-yard is much used in building the house-walls. Chatham owes its importance to its naval and military establishments situated at Brompton village (on a height half a mile north of Chatham), and on the Medway estuary. The Chatham fortified lines are the frequent scenes of field-operations, imitation battles, and reviews. The Romans seem to have had a cemetery here. Traces of Roman villas have been found, with Roman bricks, tiles, coins, and weapons. The dock-yard was founded by Elizabeth before the threatened invasion of the Spanish Armada. In 1662, it was removed to its present site. In 1667, the Dutch, under De Ruyter, sailed up the estuary of the Medway, and in spite of the fire from the castle, destroyed much shipping and stores.

In a military view, the lines of detached forts connected with Chatham constitute a fortification of great strength; and the whole is regarded as a flank defense for London in the event of an invader seeking to march on the capital from the s. coast. The place is defended also by some strong forts on the Medway. In and near Chatham are Fort Pitt, a military hospital and strong fort; barracks for infantry, marines, artillery, and engineers, a park of artillery; and magazines, store-houses, and depots on a large scale.

In a naval sense, Chatham is one of the principal royal ship-building establishments in the kingdom, and a visit to it never fails to impress the stranger with a sense of the naval power of England. The dock-yard is nearly two m. in length, containing several building-slips, and wet docks sufficiently capacious for the largest ships; and the whole is traversed in every direction by a tramway for locomotives with a gauge of 18 inches. Three great wet docks on reclaimed marsh land were completed 1883 after the labor of 17 years, and at a total cost of about £3,000,000 (including cost of site; as also convict labor valued at $400,000). The reclaimed land extended to 400 acres; and the aggregate water area of the three new wet docks is 67 acres. One of these, the repairing basin, has an area of 22 acres. It has 3,500 feet of wharfage, is 80 feet wide at the entrance and about 30–32 feet deep at high water. The largest or fitting-out basin, has a water area of 33 acres with 5,800 feet of wharfage and a depth of 30 feet. The dock-yard is controlled by a captain-superintendent.

The actual workmen, artisans and laborers, vary in number according to the amount of ship-building and repairing. In the navy estimates provision is made for about 5,000 ship-wrights, calkers, etc.

CHATHAM: town and port of entry of Northumberland co., New Brunswick; on the right bank of the Miramichi river, near its entrance to Miramichi Bay on the e. coast, and on the Intercolonial railroad. It is the seat of a Rom. Cath. bishop and has a cathedral, college, hospital, mills, halls, gas-works, some foundries and factories, and a trade in lumber and fish. Pop. 6,624.

CHATHAM: capital of Kent co., Ontario, Canada; on the Thames river, 10 m. n. of Lake Erie, 47 m. e. of Detroit, with which it has communication by steamboats and by the Grand Trunk Railway, and the Erie and Huron railroad. It manufactures iron, machinery, wool, etc., and has a good trade in timber and produce. It is the centre of a rich farming region. Pop. 9,068.

CHATHAM, William Pitt, Earl of, sometimes styled Pitt the Elder: great English orator and statesman: 1708, Nov. 15—1778, May 11; son of a country gentleman, Robert Pitt of Boconnoc, in Cornwall. After an education at Eton and Oxford, he travelled on the continent, and on his return obtained a cornetcy in the blues. In 1735, he entered parliament for Old Sarum—that synonym for electoral corruption—a borough then belonging to his family. He espoused the side of Frederick, Prince of Wales, then at deadly feud with the king, and offered a determined opposition to Walpole, who was at the head of affairs. He was deprived of his commission in consequence —an insult and injury which only increased the vehemence of his denunciations of the court and the government. His influence, both in and out of the house of commons, increased rapidly; and Walpole, being driven from power, the king, notwithstanding his hatred of Pitt, found it necessary to allow of his admission to a subordinate place in the broad bottom administration; subsequently he was appointed to the lucrative office of paymaster-general. The Duchess of Marlborough, pleased with his patriotism and powers of oratory, left him £10,000; and later, Sir William Pynsent, struck with similar admiration, left him his whole property. In 1755, when Henry Fox (afterward Lord Holland) was made sec. of state, finding himself opposed to the foreign policy of the new minister, Pitt resigned office as paymaster. In the following year, when the king, unwillingly acceding to popular demands, had to dismiss Fox, Pitt became nominally sec. of state, but was virtually premier. He immediately began to put into execution his own plan of carrying on the war with France. He raised the militia, and strengthened the naval power; but the king's old enmity, and German predilections, led him to oppose Pitt's policy, who thereupon resigned office 1757, Apr., but was recalled in June.

Now firmly established in power, Pitt's war policy was characterized by unusual vigour and sagacity. Success

returned to the British arms. French armies were beaten everywhere by Britain and her allies—in India, in Africa, in Canada, on the Rhine—and British fleets drove the few French ships they did not capture or destroy from almost every sea. But the prime mover of all these brilliant victories found himself compelled to resign (1761), when, on the accession of George III., and owing to the influence of Lord Bute, it was attempted to introduce a vacillating policy into the government; his immediate cause of resignation being the refusal of the majority of the cabinet to declare war with Spain, which Pitt foreseeing as imminent, wished to commence before the Spaniards were thoroughly prepared. As some recompense for his important services, Pitt received a pension of £3,000 a year; and his wife, sister of George Grenville, was created Baroness Chatham. Until 1766, Pitt remained out of office, not offering a factious opposition to government, but employing all his eloquence to defeat some of its most obnoxious measures. In that year he received the royal commands to form a ministry. He undertook the task, choosing for himself—to the astonishment of the public, and the sacrifice, to a considerable extent, of his popularity—the almost sinecure office of privy seal, with a seat in the house of lords as Viscount Pitt and earl of Chatham. Ill health prevented C. from taking any active part in this ministry, of which he was nominally the head, and which was weak and embarrassed throughout, and he resigned 1768, to hold office no more. He did not, however, cease to take an interest in public affairs. He spoke strongly against the arbitrary and harsh policy of government toward the American colonies, and warmly urged an amicable settlement of the differences. But when, America having entered into treaty with France, it was proposed by the Duke of Richmond to remove the ministers, and make peace on any terms, C., though much debilitated, came down to the house of lords, and in a powerful address protested against the implied prostration of Britain before the throne of the Bourbons, asserting that war, with whatever issue, was preferable to the proposed terms of peace. This address secured a majority against the motion, and the war was continued. But it was the orator's last effort; for, exhausted by speaking, on rising again to reply to a query addressed to him by the Duke of Richmond, his physical powers suddenly failed, he fell back into the arms of his friends, and was carried from the house. He died shortly afterward, and was honored with a public funeral in Westminster Abbey, where also a statue was erected to his memory at the public expense; and in addition, government voted £20,000, to pay his debts, and conferred a pension of £4,000 a year on his descendants. C.'s personal appearance was dignified and imposing, and added greatly to the attractions of his oratory, which was of the most powerful kind. His upright and irreproachable character demanded the admiration of his enemies; but his affectedness and haughtiness not unfrequently disgusted his friends, and pride rather than principle seems to have actuated his

course at some important conjunctures of his life. He had, however, an intense love of country; the grand object of his ambition being to make his native land safe against all contingencies, and powerful among nations.

CHATHAM ISLANDS: small group in the Pacific, about 450 m. due e. of the South Island of New Zealand, to which they politically belong. They are the antipodes of Toulouse in France. There are three islands—of which the largest, C. Island, is 25 m. long—and some rocky islets; total area, 628 sq. m. The C. I. were discovered 1791 by Lieut. Broughton, of the ship *Chatham*. A large salt or brackish lake occupies the interior of Chatham Island. The soil and climate of the Archipelago, in general, are said to be good. Wheat yields abundantly; and the horses, cattle, and pigs which have been introduced thrive well. Timber of any size is unknown, so that the native canoe, instead of being cut out of a single tree, is merely wicker-work bound together by cordage of indigenous flax. The people are mostly Maories and Europeans, with a few aborigines. There are two missions to the latter—one from Germany, the other from New Zealand. Pop. abt. 200.

CHÂTILLON, *shâ-te-yōng':* town of France, dept. of Cote d'Or; on the Seine, about 45 m. n.n.w. of Dijon. Population, 5,000. C. is noted chiefly for the congress of allied sovereigns 1814, Feb. 5—Mar. 19, for negotiating with Napoleon respecting conditions of peace. Several of the conditions proposed by the allies Napoleon could not bring himself to submit to, and the negotiations broke up, March 19. On the 25th, when their armies were, in fact, marching on Paris, the allies from Vitry issued their declaration justifying a continuation of the war.

CHAT MOSS: bog in Lancashire, the largest in England, about 7,000 acres in extent, and celebrated as having been the scene of the first great and successful efforts for the reclaiming of bogs, by Mr. Roscoe of Liverpool, in the end of the 18th and beginning of the 19th c., and of one of the great engineering triumphs of George Stephenson in the construction of the Liverpool and Manchester railway. It is between Liverpool and Manchester, at no great elevation above the sea. It is from 20 to 30 ft. in depth, and of such consistence that when an attempt was first made to survey it for the Liverpool and Manchester railway, the attempt was relinquished because of the impossibility of obtaining a sufficiently solid stand for the theodolite. Drains are filled up almost as fast as they are cut, by a pulpy stuff flowing into them, and affect only a few feet on either side. Great danger is experienced by any person stepping unwarily on the surface of the bog; and when he begins to sink, his struggles to extricate himself only cause him to sink faster and deeper. Mr. Roscoe's agricultural improvements were effected by numerous parallel drains in the parts on which he operated. His workmen used *pattens*, and pattens were adapted also to the feet of the horses employed: see Bog. The enlargement of the circle

upon which a horse's foot rests from five inches diameter to seven, nearly doubles it, and consequently diminishes nearly by one-half the pressure on each unit of surface. Mr. Stephenson, when he could find no one to countenance him in his views, calculated with confidence on the application of this principle to the railway, so that even the ponderous locomotive and train might be supported by a sufficient extension of the bearing surface; and this he accomplished by spreading branches of trees and hedge-cuttings, and in the softest places rude hurdles interwoven with heather, on the natural surface of the ground, containing intertwined roots of heather and long grass; a thin layer of gravel being spread above all, on which the sleepers, chairs, and rails were laid in the usual manner. Drains were at the same time cut on both sides of the line, and in the central part of the moss a conduit was formed beneath the line of railway, of old tar-barrels placed end to end. Notwithstanding difficulties which everyone but himself deemed insuperable, Mr. Stephenson constructed the portion of the line through Chat Moss at a smaller expense than any other part of the railway. There still is 'a sort of springiness in the road over the moss, such as is felt when passing along a suspension-bridge;' and 'those who looked along the moss as a train passed over it, said they could observe a waviness, such as precedes and follows a skater upon ice.'

The complete reclaiming of Chat Moss for agricultural purposes can only be a question of time and expense. It seems capable of becoming one of the most productive tracts of land in England.

CHATOYANT, *sha-toy'ant:* term denoting the changeable gleam which seems to start from deep within some minerals, such as 'cat's eye' (q.v.).

CHATRE, La *lâ shât'r:* town of France, dept. of Indre, on the left bank of the river Indre, 20 m. s.e. of Châteauroux. It has a communal college, a primary tribunal, a ruined castle, a fine church, and manufactures of wool and leather. Chestnuts are produced abundantly. Pop. 5,167.

CHATSK, or Schazk, *shâtsk:* town of European Russia, govt. of Tambov, 175 m. s.e. of Moscow, on the small river Chatsk. It is in the midst of a vast fertile plain, contains a number of churches, and has a trade in hardware, grain, and cattle. Pop. 7,260.

CHATS'WORTH: the magnificent mansion and grounds of the Duke of Devonshire; one of the most splendid private seats in England; in Derbyshire, on the Derwent, 12 m. n. by w. of Matlock. William the Conqueror gave the domain to his natural son William Peveril. It was purchased by Sir W. Cavendish in Queen Elizabeth's time. Sir W., 1570, began the old mansion, which was finished by his widow, afterward Countess of Shrewsbury. In this building Mary Queen of Scots was imprisoned for 13 years. The present edifice called a palace from its grandeur, includes the old Ionic pile, 183 by 172 ft., built 1687-1706, by the first Duke

of Devonshire, after designs by Talman and Wren. The great stables were built about 1706, and the north wing since 1720. The façade is 720 ft. long, or with the terraces, 1,200 ft. The building is nearly a square, with an interior court. Chatsworth is famed for its pictures, sculptures, hangings, carvings, and bas-reliefs. There are some exquisite sculptures by Canova, Thorwaldsen, Chantrey, etc. The grounds around are 9 m. in circuit, including hill and dale, and fine prospects. They were laid out by Loudon and Paxton and are celebrated for their trees, shrubs, rock-work, deer, and water-works—surpassed only by those at Versailles. The conservatory, unrivalled in Europe, covers nearly an acre, measures 300 by 145 ft., and 65 ft. high, has 70,000 sq. ft. of glass, and a carriage-road through it. Hobbes, the philosopher, lived long at Chatsworth.

CHATTAHOOCHEE, *chăt-ta-hô'chē:* river rising in the n.e. corner of Georgia, which it traverses. It becomes the boundary between Georgia and Alabama; and finally, after receiving the Flint, crosses Florida, under the name of Appalachicola (q.v.), into the Gulf of Mexico. Total length, 550 m.; navigable for 300.

CHATTANOOGA, *chăt-ta-nô'ga:* city of Tenn., cap. of Hamilton co., at the foot of Lookout Mountain, near the Georgia line. It is on the left bank of the Tenn. river, which is navigable most of the year; abt. 200 m. by water below Knoxville, 150 m. s.e. of Nashville, by the Nashville and Chattanooga railroad. The Western and Atlantic railroad connects it with Atlanta, abt. 150 m. s.e., and the Alabama and Chattanooga with Meridian, Miss., 295 m. s.w. The Cincinnati Southern, the East Tennessee Virginia and Georgia, and the Memphis and Charleston railroads have termini here. Since the close of the civil war Chattanooga has become one of the most noted manufacturing cities south of Mason and Dixon's line. Its neighboring hills yield abundant coal and iron, and the city has extensive manufactures of foundry and machine shop products, iron, steel, lumber, furniture, cotton and woolen goods, bricks, tiles, etc. Recent statistics give 350 manufacturing establishments, with an annual aggregate output valued at over $12,000,000 employing nearly 6,000 wage-earners. The city has electric lights and street railways, fine municipal buildings, and charitable institutions, and is noted for the vicinity of the Chattanooga and Chickamauga Nat. Military Park. Around Chattanooga some of the great battles of the civil war were fought. A great historic and military interest will always be attached to Lookout Mountain, which towers nearly perpendicularly 2,000 ft. above the city and almost in its midst. From Point Lookout, at the top of the mountain, the tourist can look upon seven states, and on the scene of Gen. Hooker's celebrated fight above the clouds; on Racoon Mountain and Walden's Ridge on the one hand, and Chickamauga and Missionary Ridge on the other, besides feasting his eye on stretches of rugged

scenery that will repay a long journey. Chattanooga is a shipping point for e. and middle Tenn., is supplied with churches, schools, banks, and newspapers, and with its abundant means of communication and its outlying coal, iron, and timber interests is destined to become a most important industrial centre. Pop. (1870), 6,093; (1880) 12,892; (1890) 29,100; (1910) 44,604.

CHATTANOOGA, BATTLES OF (Including BATTLE OF CHICKAMAUGA), in 1863. After the battle of Murfreesboro, or Stone's River, 1862, Dec. 31—1863, Jan. 2, Gen. Bragg, commanding the Confederate forces, fell back to Tullahoma. By brilliant strategy and but little fighting, Gen. Rosecrans, commanding Union forces, forced Bragg to abandon Tullahoma, 1863, June 30, and fall back to Chattanooga, an important railway center beyond the Cumberland Mountains and the Tennessee River. Rosecrans after waiting to accumulate supplies followed August 16, crossed the mountains, made a demonstration on Chattanooga with his left, under cover of which his right and center crossed the Tennessee River from 30 to 40 m. below the city, marched over the Lookout Mountains and descended into the Chickamauga valley on Sept. 8-10, about 42 m. south of Chattanooga. These movements on Bragg's left and rear compelled his evacuation of Chattanooga on the 8th, and his falling back to La Fayette, 26 m. south, to secure his communications and await the arrival of Gen. Longstreet, who was coming from Virginia with reenforcements. The left of Rosecrans' army passed over the north point of Lookout Mountain, occupied Chattanooga on the 9th, and pushed on by way of Rossville Gap to co-operate with the main body of the army in a further advance into Georgia, Rosecrans being erroneously informed that Bragg had fallen back to Rome. When it was discovered that Bragg had not fallen back beyond La Fayette, but was proceeding to attack in detail the widely separated Union divisions, and interpose between them and Chattanooga, Rosecrans began a concentration of his army to interpose between Bragg and Chattanooga, by shifting his center and right to the left, and by early morning of the 19th the movement had been accomplished; Gen. Thomas commanding the largest corps of the army, passing down the left bank of the Chickamauga, and reaching a position covering the approaches from Ringgold on the east, those on his right being held by the cavalry and that wing of the army that had moved by way of Chattanooga to cooperate with him. While Rosecrans was making this supreme effort to concentrate between Bragg and Chattanooga, Bragg was making a like effort to interpose between Rosecrans and Chattanooga. He had moved up the right bank of the Chickamauga, two divisions of Longstreet's had arrived, and on Sept. 18 parts of them marched from Ringgold, crossed the Chickamauga at Reed's bridge after driving away some Union cavalry, and went into bivouac. Two-thirds of Bragg's army were across the

stream by the morning of the 19th and the battle began by an advance of one of Thomas' brigades towards Reed's bridge; brigades and divisions on either side were drawn into an engagement, and the fighting during the entire day was very bitter, determined and bloody; but when ended in darkness Thomas still held the La Fayette and Chattanooga road, the bone of contention. The battle was resumed on the morning of the 20th by a desperate effort of Bragg to turn the Union left and gain the road to Chattanooga, which was not accomplished, but in detaching from his center and right to re-enforce Thomas on the left an unintentional gap was left in the center of Rosecrans' line, and at this critical moment Longstreet penetrated the gap and the right and part of the center of the Union army was swept from the field. Thomas, however, held his ground, formed line on Snodgrass Ridge, a bold eastward projection of Missionary Ridge, where joined by a part of Gen. Granger's reserve corps he stubbornly held ground, resisting several of Longstreet's determined assaults, until near nightfall, when he skillfully withdrew to Rossville Gap, covering the road to Chattanooga, and next day fell back to the defenses of the town. His gallant conduct on this field won him the title of 'The Rock of Chickamauga.' The Union army engaged at Chickamauga numbered about 53,000 men; the Confederate army about 50,000. The Union loss as reported was 16,170 killed, wounded and captured; the Confederate loss is estimated at about 17,600.

Gen. Bragg followed Rosecrans, Sept. 22, occupied Missionary Ridge and began the investment of Chattanooga by seizing Lookout Mountain, and the command of the Tennessee River below the city, thus cutting the main line by which Rosecrans received his supplies. As supplies could only reach the Union army by wagon trains over the mountain from Bridgeport, rations grew short, and the animals died of starvation. Gen. Hooker with five small divisions came from the army of the Potomac, arriving at Bridgeport, Tenn., Sept. 30, and Gen. Sherman with four full divisions was ordered up from Vicksburg. Gen. Rosecrans was relieved from the command of the Army of the Cumberland, Oct. 19, being superseded by Gen. Thomas, and Gen. Grant was assigned to the command of the Military Division of the Mississippi, including the forces under command of Thomas, Sherman, Hooker and Burnside, the latter at and near Knoxville, East Tenn. Grant arrived at Chattanooga, Oct. 23, and the movement for the relief of Chattanooga began, the plan which had been matured by Thomas being approved by Grant. Hooker advanced from Bridgeport into Lookout Valley, a detachment sent from Chattanooga by way of Brown's Ferry co-operating with him, and during the night of Oct. 27-28 Hooker was attacked at Wauhatchie by Longstreet, but repulsed the attack, held the valley and re-opened the line of supplies to Chattanooga. The Union loss in these operations was 441; the Confederate

loss was about the same. Nov. 4 Longstreet was detached from the Confederate forces investing Chattanooga and sent to drive Burnside from Knoxville and East Tennessee. The arrival of Gen. Sherman, Nov. 21, raised Grant's forces to about 80,000 men, of whom 60,000 were available for attack, and the Union army assumed the offensive against Bragg, who, with a little less than 40,000 men occupied a semicircle about the city, his right resting on the Tennessee river above the city, then extending southward along Missionary Ridge and to Lookout Mountain on the left. Nov. 23 Gen. Thomas carried Orchard Knob, a bold hill rising out of the valley about midway between Chattanooga and Missionary Ridge. During the night Gen. Sherman crossed some of his forces over the river above the city, and next day occupied some detached heights opposite the north end of Missionary Ridge. Nov. 24 Gen. Hooker, moving from Lookout Valley with three small divisions, scaled Lookout Mountain and carried the western and northern slopes, the Confederates retreating during the night and joining the rest of Bragg's army on Missionary Ridge. On the morning of the 25th Hooker descended Lookout Mountain, marched across Chattanooga Valley to Rossville Gap, and dispersing the Confederates at that point, began to march northward along the ridge. Sherman made several unsuccessful attacks upon Bragg's right on Missionary Ridge. About 3:15 P.M. Gen. Grant ordered Thomas, in the centre, to advance upon the Confederate rifle-pits at the foot of the ridge. Thomas sent four divisions that carried the rifle-pits, and without orders ascended the ridge, carrying the entire crest of 3 miles in their front, capturing 37 guns and, in connection with Hooker's forces on the right, capturing several hundred prisoners. Bragg retreated but was overtaken by Hooker at Ringgold Gap where his rear guard under Gen. Cleburne made a stubborn resistance, under cover of which the main body and trains fell back to Dalton, about 30 miles s.e. of Chattanooga. Grant's losses at Chattanooga, including the three days' battles and the engagement at Ringgold, were 703 killed, 4,722 wounded, 349 missing; Bragg's losses were 361 killed, 2,180 wounded, 4,146 missing.

CHATTELS, n. *chăt'tls* [F. *chatel;* OF. *chaptel,* a piece of movable property—from mid. L. *captālĕ,* the principal, as distinguished from interest: comp. Gael. *caithdiol,* the spoil of battle]: goods in general, with the exception of lands or houses—anciently applied to cattle, as being the principal wealth of the country. GOODS AND CHATTELS, in *law,* movable property, and estates in land limited to a certain number of years: see CATTLE. In the ancient law of England, *chattel* from a positive point of view, included not only all movable property, but all property which, though immovable, was not held on a feudal tenure. Any estate, then, or interest in lands and tenements not amounting to freehold, is a chattel. But as, between property thus 'savoring of reality' and mere personal movables—money,

plate, cattle, and the like—there was a manifest distinction; chattels were, consequently, distinguished into *chattels-real* and *chattels-personal*. Both descriptions of chattels, in the ancient law of England, were regarded as inferior to freehold, and formed a subordinate class of property. As distinguished from estates of inheritance, or for life in things immovable, such estate is called *personal*, the others being *real* estate. Recent changes in English laws show a tendency to obviate at some points the distinction between these classes of property.

CHAT'TERER: significant popular name, often applied to the birds of the family *Ampelidæ*, a family of the order *Insessores* and tribe *Dentirostres*, having a depressed bill like that of the fly-catchers (*Muscicapidæ*), but somewhat shorter and broader in proportion, and slightly arched. To this family belong the cotingas, wax-wings, piauhaus, caterpillar-hunters, etc. They are found chiefly in the warmer parts of the old world, though America also produces some. They inhabit low grounds of forests, feeding chiefly on insects and their larvæ. Some of them possess powers of song almost equal to those of the nightingale. Many of them are birds of gorgeous plumage: see WAX-WING.

CHATTERTON, *chăt'er-ton*, THOMAS: 1752, Nov. 20—1770, Aug. 25; b. Bristol, England: poet, whose youth, genius, and tragical death have made him one of the wonders of English literature. His father, who had once been a chanter in the Bristol cathedral, and also master of a kind of free-school, died two or three months before the poet's birth. Chatterton was educated at a parish-school, was considered a dull child, but making acquaintance wi h a black-letter Bible which his mother often used, the dormant spirit flashed up. From early years he was fond of all kinds of antiquities; he clung around old walls like the ivy, and haunted twilight ruins like the bat. At the age of 14, he was apprenticed to Mr. Lambert, an attorney. His situation here was uncomfortable; he took his meals in the kitchen with the footboy, and when refractory, was chastised with a ruler. In 1768, Oct., the new bridge at Bristol was opened, and Chatterton sent to a newspaper an account, in antique phraseology and spelling, of the ceremonies attending the opening of the old one several centuries before—the whole purporting to be taken from an ancient MS. To a certain Bristol pewterer, Burgum by name, he presented himself, and astonished the craftsman by the sight of a parchment, in which his pedigree was traced back to the Norman Conquest, adorned by many a splendid marriage, and many a knightly name. He also exhibited to his friends copies of old poems, which he said were composed by one Thomas Rowley, a monk of the 15th c. These matters made some stir in his native city, but not enough to satisfy Chatterton, who resolved to fly at higher game. Accordingly, Horace Walpole, at that time collecting additional materials for his *Anecdotes of Painting in England*, received from Chatterton several pages of antique writing, accompanied by a short note.

The pretended MS. gave biographical sketches of celebrated painters who had flourished in England several centuries ago, and of whose existence Walpole had never dreamed. Walpole, put off his guard, answered his unknown correspondent at once; expressed his delight at receiving the MS., and desired, as a personal favor, that all the other antique writings, poems included, mentioned in the note, should be forwarded. Chatterton, highly elated, immediately sent accounts of a great many more painters and poets, and also gave some slight sketch of his personal history. On receipt of this second communication, Walpole suspected a trick. The poems he showed to Mason and Gray, who at once pronounced them forgeries; he then wrote Chatterton expressing his suspicions as to the genuineness of the MS., and administering at the same time a great deal of excellent advice. Chatterton replied, desiring that the MS. should be returned at once; but by the time the letter reached London Walpole was about to start for Paris, and it was allowed to remain unanswered. On Walpole's return, some six weeks thereafter, a fierce note from Chatterton waited him, the contents of which must have brought the blood to his polished and urbane brow; indignant, he bundled up the MS. and returned it without a word of explanation.

From his earliest youth Chatterton had a ghastly familiarity with the idea of suicide. Among his papers, preserved in the British Museum, is a last will and testament 'executed in the presence of Omniscience, the 14th of April, 1770,' full of the wildest wit and profanity. Another document of similar purport, falling into the hands of his friends, led to his dismissal from Mr. Lambert's office. Released from what he considered the slavery of law, Chatterton's eyes turned to London; and in that city he arrived, carrying with him all his Rowley MS. and several modern poems, and 1770, Apr. 24, Tuesday, took up his abode with one Walmsley, a plasterer, in Shoreditch. No sooner had he settled there than he began to work as with a hundred hands. During the last few months of his life, he poured forth squibs, satiric poems, political essays, burlettas, letters in the style of Junius, and meditated writing a history of England, to appear in parts. For a time his prospects seemed golden enough. He obtained an introduction to Lord Mayor Beckford; he sent glowing letters home, accompanied by presents to his mother and sisters. Ultimately he left the plasterer's in Shoreditch, and took lodging in Brooke street adjoining Holborn. Unhappily for Chatterton, editors of opposition papers were willing enough to insert and praise his articles, but were disinclined or unable to render an equivalent in cash. Possibly they conceived that a patriotism so ardent must be its own reward. The means of life were now fast failing. In desperation, he attempted to procure an appointment of surgeon's mate in a vessel going to Africa, but failed. This was the last drop that made the cup overflow. On Aug. 25, Saturday, his landlady, alarmed that her lodger did not make his appearance, had the door

of his room broken open; saw the floor littered with small pieces of paper, and Chatterton 'lying on the bed with his legs hanging over, quite dead.' Just at this time, Dr. Fry, of Oxford, who had seen or heard something of the Rowley poems, was on the eve of starting for Bristol to make inquiry into the matter. Sad enough to think on now—a little promptitude on the one hand, a little patience on the other, and the catastrophe might have been averted.

Chatterton died before he reached his 18th year, and takes his place as the greatest prodigy in literature. Indeed, in our judgment of him, age cannot be taken into account. He never seems to have been young. His intellect was born fully matured. He was equally precocious in other respects. In his letters, he speaks of the relation of the sexes in the tone of a sated *roué*. He never seems to have felt the delicious shame and ingenuousness of youth; over his heart never was outspread 'the bloom of young desire and purple light of love.' The *Kew Gardens* is written in the style of Churchill, and it possesses all that master's vigor, and every now and then we come on a couplet turned with the felicity of Pope. His genius, however, is in its greatest perfection in the ancient poems. No poet, before or since, has written a tenderer strain than the lament in *Ælla*, or conceived a bolder image than the personification of Freedom in the ode to Liberty in his *Tragedy of Godwin*. Chatterton's life has been written by many hands, but the best and most sympathetic sketch of it is that given by Prof. D. Masson of Edinburgh Univ. in his collected essays. See *The Poetical Works of Thomas Chatterton*, by the Rev. Walter Skeat, M.A. (1875).

CHAUCER, *chaw'sēr*, GEOFFREY: the father of English poetry: prob. abt. 1340 (traditional date 1328)–1400, Oct. 25. Recent researches have made it clear that Chaucer was the son of John Chaucer, a London vintner. It has been said that he studied at Cambridge, and afterward removed to Oxford. While at the univ. he wrote *The Court of Love*, and *The Book of Troilus and Cresseide*. At one period he seems to have turned his attention to law, and to have become a member of the inner temple. About these matters his biographers, knowing little, have conjectured much. The only particular of Chaucer's youth of which an anxious posterity can be certified is, that he one day thrashed a Franciscan friar in Fleet street, and was fined two shillings for the exploit on the next. History has preserved this for us, but has forgotten all the rest of his early life, and the chronology of all his poems.

In 1359, Chaucer assures us, on his own authority, that he served under Edward III. in his French campaign, and was therein made prisoner. The date of his return from captivity, and of his subsequent marriage, cannot now be ascertained. He espoused Philippa, youngest daughter of Sir Payne Roet, whose estates lay in Hainault. His wife's sister, Katharine, ultimately became the wife of John of Gaunt, Duke of Lancaster; and it may be pre-

sumed that the high connection thus established aided the poet's advancement in life. After his marriage, he began to mix in public affairs. He was sent on an embassy to Genoa, 1372, and on that occasion has been supposed by some to have had an interview with Petrarch, then residing at Padua, and to have heard from his lips the story of *Griselda*. On his return, he was appointed comptroller of the customs for wools, and in the same year the king granted him a pitcher of wine daily for life. In 1377, Chaucer proceeded to Flanders in the retinue of Sir Thomas Percy, afterward Earl of Worcester; and for several years thereafter he was employed assiduously in embassies and other business connected with the public service. In 1386, a commission was issued to inquire into alleged abuses in the department of the customs, and in Dec. Chaucer was dismissed from his comptrollership. On meeting this fact, one cannot help remembering that Edward made the writing out of the accounts in Chaucer's own hand the condition of his holding office. Had the great poet neglected his duties? It has been conjectured by some that after his disgrace Chaucer became embarrassed in circumstances, and apparently with reason, for about this time he cancelled both his pensions, and consigned them to one John Scalby, 'to whom they were probably sold under pressure of distress,' says his latest biographer. In 1387, Chaucer lost his wife. Where he spent his closing years, cannot now be ascertained. Godwin surmises that in his distress he retired to Woodstock and composed there *The Canterbury Tales*. It seems, however, nearly certain that during the last years of his life he was resident in London. There he died, and was buried in Westminster Abbey, the first of the long line of poets whose ashes repose in that venerable pile.

Chaucer was a worthy representative of the 14th c. He was a master of the science, the theology, and the literature of his time. He had seen many men and cities. His poems are numerous, and of various poetical excellence. Many scholars deny, on grounds of rhyme, that Chaucer was author of *The Court of Love*, *The Flower and the Leaf*, and *The Romaunt of the Rose*, long unhesitatingly regarded as his. These are chiefly on French models, and are gorgeous allegories full of queens and kings, bowers, bevies of beautiful ladies, brave knights, and pious nightingales that sing the praises of God. They appeal potently enough to the eye, but they do not in the slightest degree touch the heart, or relate themselves to human concerns. Quite different *The Canterbury Tales*, so full of humor, pathos, and shrewd observation. In these tales English life, as it then existed, is wonderfully reflected—when the king tilted in tournament, when the knight and the lady rode over the down with falcon on wrist, when pilgrimages bound for the tomb of St. Thomas passed on from village to village, when friars sitting in tavern over wine sang songs that formed a remarkable contrast with the services they so piously and sweetly intoned. All that stirring and

gaily-apparelled time—so different from our own—is seen in Chaucer's work, as in some magic mirror; and in his case, as in every other, when the superficial tumults and noises that so stun the contemporary ear have faded away, leaving behind that which is elemental and eternal, the poet is found to be the truest historian. Among Chaucer's writings may be mentioned: *The Book of the Duchess*, *The House of Fame*, and *The Legend of Good Women*. The genuineness of *The Court of Love* and of *The Flower and the Leaf* is denied by Mr. Furnivall, and by Mr. Skeat in his new edition of Chaucer (4 vols., 1878).

CHAUCI, *kaw'sī:* ancient tribe, between the Ems and the Elbe in Germany; mentioned by Tacitus as powerful and brave, but peaceable and just. See SAXONS.

CHAUDES-AIGUES, *shōd-zāg':* town of France, dept. of Cantal, about 12 m. s.s.w. of St. Flour. It is noted for its hot mineral springs, which have the property of discharging grease from sheep's wool; and vast numbers of fleeces are sent hither annually to be washed. The waters are also taken for rheumatism and cutaneous diseases. Pop. 1,200.

CHAUDET, *shō-dā'*, ANTOINE DENIS: 1763, Mar. 31—1810, Apr. 19; b. Paris: sculptor. He took the first prize of the Acad. at the age of 20, and became a member on his return from Rome, where he was intimate with Drovais, the painter. His opposition to the corrupt classicism of that age retarded his fame, which was established by his *Œdipus*, exhibited 1801. His first work was a bas-relief, *Love of Glory*, under the peristyle of the Pantheon. Some of his best, in the museums of Luxembourg and Trianon and elsewhere, are *Sensibility*, *Cyparissa*, *Surprise*, *Paul and Virginia*, *Cincinnatus*, and the bas-relief of *Joseph and his Brethren*. Another, representing *Painting*, *Sculpture, and Architecture*, is in the Musée Napoléon. Chaudet was also a good painter and designer, and illustrated Didot's edition of Racine and some other books. He died in Paris. His wife, Jeanne Élisabeth Gabion (1767—abt. 1830), was his pupil, and attained eminence as a painter of portraits and figure pieces.

CHAUDFONTAINE, *shōd-fōng-tān':* village charmingly situated in the valley of the Vesdre, a few miles from Liége, in Belgium, and noted for a hot spring which supplies hot-baths. There are hotels and lodging-houses for the accommodation of visitors. The place is a favorite resort of the Liégois. There is here a station on the railway from Liége to Aix-le-Chapelle. Pop. 1,400.

CHAUDIÉRE, *shō-de-ār':* a river and lake of Canada. The river joins the St. Lawrence from the s., about 7 m. above Quebec, forming the celebrated falls of its own name, about 2½ m. from its mouth.

The lake—merely one of the many expansions of the Ottawa—has on its right the city of Ottawa, the metropolis of the united colony.

CHAUFFEUR, n. *shō-fėr*, or (American *shâf-fėr*): a

driver and caretaker of an automobile; anglicized from the French *chauffeur*, signifying stoker, fireman, or bellows-blower of a forge; derived from *chauffer*, v. t., to heat, to warm, to excite, to animate or urge onward.

CHAULIAC, *shō-le-âk′*, or *shōl-yâk′*, or CHAULIEU, *shō-le-ėh′*, or *shōl-yėh′*, GUI DE: French surgeon of the 14th c. He studied at Montpellier and Bologna, practiced at Lyons, and was physician to three of the Avignon popes, Clement VI., Innocent VI., and Urban V. His *Inventarium*, translated into French by Laurent Joubert, 1592, as *Grande Chirurgie*, is claimed to have laid the foundations of the modern principles and practice, and was for 200 years esteemed the highest authority. C. revised the professional knowledge of antiquity, invented instruments, and operated for cataract. He wrote from experience and account of the plague in France, 1348.

CHAUMETTE, *shō-mĕt′*, PIERRE GASPARD: 1763-1794, Apr. 13; b. Nevers: one of the most extravagant characters of the French Revolution. He made his first public appearance at the Cordeliers Club, where he was introduced by Camille Desmoulins. His 'sans culottism' gained him such popularity, that he was appointed procurator of the community of Paris, in the place of Manuel. Chaumette was very enthusiastic in favor of the 'worship of reason.' In his zeal, he rejected his own Christian name, Pierre, as having been sullied by saintly associations, and styled himself 'Anaxagoras.' The institution of the tribunal of the Revolution, the decree for a revolutionary army, and the law against suspected aristocrats, were carried into effect by Chaumette with others. He also proposed that the whole French nation should be made to wear wooden shoes, and to subsist on potatoes; but this was too much even for the chimerical enthusiasm of his compatriots. His antics, however, in connection with the 'worship of reason' excited the disgust of Robespierre, who devised measures for bringing the whole company of actors under Hébert to the scaffold. Chaumette was arrested and imprisoned on a charge of having been implicated in a plot against the convention, and was put to death.

CHAUMONOT, *shō-mo-no′*, PIERRE MARIE JOSEPH: 1611–93, Feb. 21; b. near Chatillon-sur-Seine: Canadian missionary. Beginning life with the robbery of an uncle, he soon repented, became a Jesuit and a priest at Rome, went to Quebec with Poncet, 1639, and gave himself to the instruction of the Hurons and Neutrals. After the dispersion of the former by the Iroquois, he made a Christian settlement of Hurons at Isle Orleans, 1651, spent 1655–58 with the Onondagas, and aided to establish the mission of Notre Dame de Foye, five m. from Quebec. This was removed, 1693, to Lorette, and there he died. He wrote a Huron grammar, published by the Literary and Historical Soc. of Quebec, 1835; a vocabulary, a catechism, and a set of instructions, also in Huron, and a French memoir of his life, which remain in MS.

CHAUMONT, *shō-mōng':* town of France, dept. of Haute-Marne, on an elevation between the rivers Marne and Suize, about 140 m. s. e. of Paris. It is generally well built, with clean, spacious streets, and fine promenades round the upper part of the town. There are considerable manufactures, including hosiery, cotton-yarn, gloves, etc. 1814, Mar. 1, the allied powers here bound themselves by treaty against Napoleon, in the event of the negotiations at Châtillon ending unsatisfactorily. Pop. 12,000.

CHAUMONT, Donatien Le Ray de: a councilor of Louis XV., grandmaster of the waters and forests, and honorary intendant of the Hôtel des Invalides. Chaumont purchased, 1776, Aug., the château of Passy, a house adjoining which was offered to Benjamin Franklin on his arrival in Paris 1776, Dec., and occupied by him for nine years: in it he wrote his autobiography, and on it he placed the first lightning rod in Europe. Chaumont, who was then wealthy, offered a château at Blessois to John Adams, sent powder and clothing to the American army, and equipped five vessels for Paul Jones, with whom he was on terms of intimacy. He maintained confidential relations with the French government, and was its most active agent in conducting its operations in support of American independence. His large tracts of land in northern N. Y. passed to his son of the same name (1761-1840), who was impoverished by them and forced to make an assignment. His 348,206 acres in Franklin, St. Lawrence, Jefferson, and Lewis counties were once valued at $835,500. The towns of Chaumont and Raysville were named from him. He founded the Jefferson Co. Agricultural Soc., and was among the first presidents of that of the state. After long residence in N. Y. he returned to France, and died in Paris. See articles by the Hon. John Bigelow in the *Century Magazine,* 1888, March.

CHAUNCEY, or Chauncy, *chăn'sĭ* or *chawn'sĭ,* Charles, ll.d.: 1747, June 11—1823, Apr. 28; b. Durham, Conn. He was admitted to the bar at New Haven 1768, made state attorney 1776, and judge of the superior court 1789-93. He lectured on jurisprudence for 40 years, and was a founder and pres. of the Conn. Agricultural Soc. He died at New Haven. His son, Charles Chauncey (1777-1849), removed to Philadelphia 1798, and won the highest rank at the bar there, but declined all offices.

CHAUNCEY, or Chauncy, Isaac, u.s.n.: 1772, Feb. 20—1840, Jan. 27; b. Black Rock, Conn. Entering the merchant service in boyhood, he was a captain at 19, made several voyages to the East Indies for John Jacob Astor, and once brought a ship from Charleston to New York unaided, when all the crew were down with yellow fever. He became a lieut. in the navy on its organization 1798; was acting capt. of the frigate *Chesapeake* 1802; distinguished himself in the war with Tripoli 1804; was thanked by congress and voted a sword, which was never presented; was promoted master 1804, capt. 1806. He was in command of the Brooklyn navy-yard 1808-12, and then of the lakes.

Reaching Sackett's Harbor 1812, Oct., he constructed a fleet, kept watch of the enemy, co-operated with the land forces under Gen. Pike in the capture of York (now Toronto) 1813, Apr. 25, defeated a British fleet in York Bay, Sept. 27, took five vessels with part of a regiment Oct. 5, and blockaded Sir James Yeo at Kingston for six weeks, 1814, Aug. and Sep He commanded the Mediterranean squadron 1816-18, negotiated a treaty with Algiers, was again in command of the Brooklyn navy-yard, and was pres. of the navy commission from 1833. He died at Washington. His is one of the great names of the U. S. Navy in its earlier days.

CHAUNCY, CHARLES, D.D.: 1705, Jan. 1—1787, Feb. 10; b. Boston; great-grandson of the pres. of Harvard. He graduated at Harvard 1721, and was ordained 1727 as colleague pastor of the First Church in Boston; there he remained for 60 years. His learning and independent spirit were shown in numerous publications, as *Seasonable Thoughts on the State of Religion in New England* (1743); *Dudleian Lectures* (1762); *Benevolence of the Deity* (1784); *Mystery hid from Ages* (1785); *On the Fall and its Consequences* (1785). They are largely polemic, as *Remarks on the Bishop of Llandaff's Sermon* (1767). His *Complete View of Episcopacy* (1771) was a discussion with Dr. Chandler of N. J., and his *Discourse on Enthusiasm* (1742) was aimed at Whitefield.

CHAUNCY, or CHAUNCEY, *chăn'sĭ* or *chawn'sĭ*, CHARLES: 1592-1672, Feb. 19; b. Yardley, Hertfordshire, England: second president of Harvard College. He was educated in Westminster and Cambridge, England; was prof. first of Hebrew and then of Greek in the Univ. of Cambridge, and became vicar of Ware, Hertfordshire, 1627. Imprisoned and fined for denouncing the Book of Sports and the Chancel Railing, he recanted, repented of his recanting, and emigrated. Reaching Plymouth, Mass., 1638, he was reordained, remained there three years as asst. minister, went to Scituate as pastor 1641-54, and was about returning to his vicarage at Ware (now under the commonwealth) when he was asked to succeed Henry Dunster as pres. of Harvard. Entering on this post 1654, Nov. 27, he held it till his death. He was an industrious and learned man, eminent as a physician, and zealous against long hair and the baptism of the children of non-communicants. He published a *Retractation* (1641, written 1637), some sermons (1655–6), 26 on *Justification* (1659), *Antisynodalia Americana* (1662), and an article prefixed to Leigh's *Critica Sacra* (1639). His six sons all graduated at Harvard and became ministers. He is said to be the ancestor of all Americans of his name. The family history is given by W. C. Fowler in *The Chauncey Memorial* (1858).

CHAUNY, *shō-nē':* town in France, dept. of Aisne, about 18 m. w.n.w. of Laon, partly on the right bank of, and partly on an island in, the river Oise, which is here navigable. It is an old, rather uninteresting place, with manufactures of sacking, hosiery, chemicals, and leather, and an active trade. Pop. 9,000.

CHAUSSES, *shō-sā'*, in the armor of the middle ages: defense-pieces for the legs. Some were of padded and quilted cloth, with metal studs; some of chain-mail; some of riveted plates; and some of banded mail. It was not unusual to fasten them by lacing behind the leg.

CHAUTAUQUA INSTITUTIONS: various institutions centering in Chautauqua co., near the extreme western end of N. Y. The chief of these are the following:

CHAUTAUQUA ASSEMBLY: institution established by the Hon. Lewis Miller, of Akron, O., and the Rev. John H. Vincent, D.D., of New York. It received its name from its location upon a point of land on Chautauqua lake, originally known as Fair Point, 16 m. from Jamestown, 3 m. from Mayville, Chautauqua co., N. Y. Chautauqua Lake is a few miles s. of Lake Erie. The first session was held 1874, Aug., and annual sessions have been held since. The original plan was of a gathering in the forest, where, for a fortnight or more, Sunday-school teachers could receive instruction for their work by lectures, normal classes, Bible readings, a model Sunday-school, and other exercises, the 'week-day' features of true Sunday-school work being largely recognized. Many thousand people attended and nearly 200 teachers passed through a regular course, with examination, required readings, and certificate at the close. The success of the first meeting led to the permanent organization of the Chautauqua Assembly (Lewis Miller, pres., and J. H. Vincent at first called 'supt. of instruction,' afterwards 'chancellor'). At its annual sessions many new features have been introduced, largely outgrowths of the 'week-day power' idea which found place in 1874; and the place has become a centre of popular education, not merely in Sunday-school knowledge, but in every department, and for all varieties of students. The work has been systematized into departments, such as the College of Liberal Arts, Teachers' Retreat, etc., with regular courses of instruction, embracing classes in the English, German, French, Spanish, Italian, Swedish, Sanskrit, Latin, Greek, Hebrew, Assyrian, and other languages; in mathematics; the natural sciences, history, mental and moral science, pedagogics, the English Bible, theology, Sunday-school and church work, etc. Courses of popular and scientific lectures, concerts, and varied entertainments also are given. The grounds embrace nearly 150 acres upon the western shore of the lake, and laid out in parks and streets, lined with cottages and lecture halls. Among the most important buildings are the Amphitheatre, built in a natural ravine, and seating nearly 6,000 people; the Hall of Philosophy, a Greek temple in form, the headquarters of the Chautauqua Literary and Scientific Circle (see below); the Hotel Athenæum; the Normal Hall; the College of Liberal Arts, in which are held many of the classes of the various schools; the Museum of Archæology, containing a collection of casts photographs, and models of works of art; and the Children's Temple, in which the young people's department holds its meetings. The sum-

mer schools open about July 1 in each year; the assembly proper opens on the first Tuesday in August, and extends through three weeks. As an outgrowth of the Chautauqua movement, assemblies upon the same plan have been established in various parts of the country. They are independent, but affiliated in their work, having in nearly all of them the same normal course for Sunday-school teachers with provision for expert daily instruction, and the C. L. S. C., with its 'Recognition Day' for conferring diplomas. Among the largest of these 'Chautauquas' (as they are called) are the assemblies at Framingham, Mass.; Lakeside, O.; Island Park, Ind.; Monona Lake, Wis.; Waseca, Minn.; Ottawa, Kan.; De Funiak, Fla.; Long Beach, Cal.; Piedmont Chautauqua, Atlanta, Ga.; Monteagle, Tenn.; Northfield, Mass.; Round Lake, N. Y. And there are many others.

Chautauqua Literary and Scientific Circle: educational institution for the promotion of reading in the homes of the people, established by the Rev. Dr. John H. Vincent, at Chautauqua, 1878, and since introduced, not only among all English-speaking peoples, but also in India, Japan, and Syria. Its plan includes a four years' course of reading, modelled somewhat upon the college course, but all in the English language, and adapted for reading rather than for study. The literature and history read in each year of the course is that of a different people, being in succession American, English, Greek, and Roman. Each of the important sciences is treated in a text-book, giving general, rather than technical knowledge. The course embraces from six to eight books each year, besides required readings in *The Chautauquan*, a magazine which is the organ of the C. L. S. C., published at Meadville, Penn., monthly, under capable editorship. A peculiarity of the plan is that no one year's readings are regarded as 'first year,' 'second year,' etc.; but the entire membership of the circles, on any given year, as 1906, take the same studies, which may be the *first* year to some, the *second* year to others, the *third* to those who joined in 1904, etc. The circle goes through the course in any given four years, but each class pursues the studies in a different order. Each student takes up the course with whatever year's reading the circle may be at work on, and in four years will have gone the round of studies. The plan of study and reading may be pursued either by individuals or by groups of readers, united in local circles. The enrolled membership is more than 260,000 in number, including readers in nearly every town of the United States and Dominion of Canada, in England, continental Europe, the Cape of Good Hope, Australia, the Sandwich Islands, etc. There are about 2,000 readers in Japan, pursuing the course in their own language, and having their own Japanese *Chautauquan Magazine*. It has also been introduced into Russia, into Syria, and into India. The annual meetings of the C. L. S. C. are held at Chautauqua, N. Y., during the assembly, and consist of reviews of the course, gatherings for social enjoyment, Sunday afternoon

vesper-services, a daily 'Round Table,' in the Hall of Philosophy, and the annual service of conferring diplomas on those who have completed the course, on 'Recognition Day.' Similar exercises are held in all the Sunday-school assemblies throughout the United States. Memorial days, similar to the saints and other calendar days commemorating, with special studies, notable personages and events are also features of the C. L. S. C. As a popular yet scholarly course of reading, no single feature of C. I.'s so fully commands respect as the C. L. S. C.

Chautauqua College of Liberal Arts: that department of the Chautauqua Univ. that offers full college courses and training to non-resident students. It is peculiar, not in the kind or amount of instruction offered, but in the method of communication between teacher and student. It was opened in its new form for instruction 1884, Oct., but had been in practical operation for several years. It is authorized by its charter to confer the regular college degrees, but has chosen for the present to offer courses leading to the bachelor degree only. The grade of work is that of the first American colleges, and the examinations and degrees are especially guarded. The late Dr. W. R. Harper, the distinguished Hebraist, pres. of the University of Chicago, was the first principal of the Chautauqua College of Liberal Arts. Having taken the full curricula of the resident colleges, a sufficient number of lessons is printed on each course of study. These are written on a strictly inductive method and adapted to the need of non-resident students. These printed lessons contain all directions, suggestions, and questions needed to enable the student to master the work assigned. The exercises, theses, and notes asked for in the lessons are sent to the professor, who corrects them, adds suggestions, and returns them to the student. The teacher and student are thus in constant communication. The students do not work in classes but individually, and provision is thus made for a student to work fast or slowly, as he may need. The leading ideas underlying the work are these: (1) The full college idea in its range and thoroughness; (2) the desirability of enabling those who cannot attend the resident colleges to receive college training and honors at their homes. Only such students are taken; (3) the extending of the college work and influence from the older college centres into the homes of the people. It thus uses the ideas that underlie the university-extension movement in England; (4) the nature of the work determines the character of the students. They must be mature and earnest. These qualities overcome the disadvantages of non-residence; (5) the inductive methods of study and teaching are especially adapted to correspondence. Chautauqua College holds a session every summer, at Chautauqua, N. Y. Here the students are trained in classes, in nearly all the subjects of a college course. The equipment of halls, libraries, reading and study classes, etc., and residential appointments, are perfect.

The Chautauqua School of Theology is a department of the university.

CHAUTAUQUA LAKE, *sha-taw'kwa:* in Chautauqua co., N. Y. It is 18 m. long, and 1 to 3 m. wide; 730 ft. above Lake Erie, and 1,290 ft. above the Atlantic. Its waters flow through Conewango creek into the Alleghany river. Steamboats ply from the outlet to Mayville, at the n.w. end.

CHAUVEAU, *sho-vo'*, Pierre Joseph Olivier: b. 1820, May 30, at Quebec, Canada: statesman. He received a collegiate education, was admitted to the bar 1841, entered parliament 1844, and became solicitor-gen. for Lower Canada 1851, provincial sec. and member of the executive council 1853, and supt. of education for the province of Quebec 1855. He was premier of Quebec 1867–73, pres. of the harbor commission 1876, sheriff of Montreal 1877, appointed prof. of Roman law in Laval Univ. 1878, and afterward elected dean. In the course of his official life he examined the school and college systems of the leading European countries, became a member and pres. of the Royal Soc. of Canada, and other learned organizations, established normal schools and several educational periodicals in the English and French languages, and published a number of poems and prose works, including *Voyage of the Prince of Wales to America* (1861), and *Public Instruction in Canada* (1876). His last work, *François Xavier Garneau, his Life and Works,* was published 1883.

CHAUVEAU-LAGARDE, *shō-vō'lâ-gârd'*, Claude François: 1760–1841: b. Chartres, France: lawyer. Despite the personal peril of the undertaking, he made a brilliant defense of Miranda and Brissot, and gained such distinction thereby that he was appointed chief counsel for Charlotte Corday, and chosen leading counsel by Marie Antoinette for her trial, 1793. After his unsuccessful plea in behalf of the queen, he was imprisoned nearly a year. He became advocate of the council of state under Napoleon. His published works include a *Narrative of the Trial of Marie Antoinette* (1816).

CHAUVELIN, *shōv-lăng'*, François Bernard de: 1766–1832; b. France: statesman. He united with the popular party 1789, was appointed ambassador to England, and accompanied Talleyrand, the unofficial manager of the negotiations, 1792. On the announcement in England of the death of Louis XVI., Chauvelin was ordered to leave the country within a week. He returned to France, became a member of the *tribunat* and prefect of Lys under Bonaparte, and was given the title of count for his political services. He was a prominent member of the chamber of deputies for 10 years after the restoration 1816, and some time speaker, siding with the liberals.

CHAUVENET, *shō-vėh-nā'*, William, ll.d.: 1819, May 24—1870, Dec. 13; b. Milford, Penn.: mathematician. He graduated at Yale 1840, took observations at Gerard Col-

lege as asst. to A. D. Bache, was made prof. of math. in the navy 1841, and placed at the United States Naval Asylum at Philadelphia 1842. He actively helped to establish the Naval Acad. at Annapolis, and was prof. of math. and astron. there 1845–59. He declined the chair of math. at Yale 1855 and that of astron. 1859, but accepted, 1859, that of math. in the Washington Univ. at St. Louis, where he became chancellor 1862. He resigned from ill health, 1869, and died at St. Paul, Minn. His *Trigonometry* (1850), *Astronomy* (1863), and *Geometry* (1870), are widely used as text-books. He also published *Binomial Theory and Logarithms* (1843), and contributed to the *Proceedings* of the Amer. Assoc. and to several scientific periodicals.

CHAUVINISM, n. *shŏv′ĭn-ĭsm* [after *Chauvin,* a character in a French play of the Restoration who was always boasting of his exploits at the battle of Jena, and vowing that he would one day avenge Waterloo]: the temper which seeks to quarrel with one's neighbor in the spirit of a braggart; blustering, quarrelsome braggadocio. CHAUVINIST, n. *shŏv′ĭn-ĭst,* a quarrelsome politician, seeking to avenge some national disaster or defeat, or to irritate another power; a ridiculous patriot.

CHAUX DE FONDS, *shō-de-fōng′:* town of Switzerland, canton of Neuchâtel, 9 m. n.w. of Neuchâtel. It is in a bleak valley, 3,070 ft. above the sea, and is scattered over a large area, almost every cottage being surrounded by a garden or croft. It is one of the chief seats of the manufacture of clocks and watches in the canton. The mechanics work chiefly at home, each devoting himself to a particular portion of machinery. This industry employs 12,000 hands. Pop. 36,400.

CHAVEHDER, or CHEVEN: see CHUB.

CHAVICA, n. *shăv-ī′kă* [a native name]: the native name for the long-pepper and betel-pepper plants, which are extensively used as intoxicants in the East. CHAVICINE, n. *shăv-ī′sĭn,* one of the two active bases or alkaloids found in these plants, having a very fiery taste.

CHAW, v. *chaw,* CHAWEN, pp. *chawn,* or CHAWED, pp. *chawd:* OE. spellings of CHEW, and CHEWN, or CHEWED; CHAW is also an old spelling of JAW.

CHAWDRON, n. *chaw′drŏn,* or CHAULDRON, n. *chawl′-drŏn* [F. *chaudron,* a kettle; Ger. *kaldaunen,* entrails]: in *OE.,* part of the entrails of an animal; the paunch.

CHAWS, n. plu. *chawz:* an old spelling of JAWS.

CHAYENPUR, *chī-en-pôr′:* fortified town of Nepaul, in the n. of India, about 120 m. to the e. of Khatmandu, cap. of the state; lat. 27° 20′ n., and long. 87° 3′ e. Chayenpur is the chief town of a dist. which yields rice, wheat, cotton, ghee or butter, timber, spices, sugar, tobacco, and pearls.

CHAY ROOT, *chā*, or CHOYA, *choy'a*, or SAYAN, *sā'an* (*Oldenlandia umbellata*): perennial herbaceous plant of the nat. ord. *Cinchonaceæ*, said to be native both of India and of Mexico. It is cultivated on the coast of Coromandel for its long, orange-colored roots, the bark of which affords a beautiful red dye. The quality of the bark is said to be improved by keeping it for some years. It is the coloring matter obtained from chay root which is used to paint the red figures on chintz. Chay root is the Indian madder, and in it some tribes in Ceylon formerly paid their tribute.

CHAZARS: A people whose kingdom was firmly established in south Russia several centuries before the Russian monarchy was founded (855). For many hundred years making Armenia a battle-ground, coming originally from the Ural, they made alliances with the Byzantines, became tributary for a while to Attila, when they attained greater strength, conquered the Caucasian Goths, and aided Heralclius, the Byzantine ruler, to conquer the Persians (626-627); a few years later they overwhelmed the Bulgars, extending their sway materially. About this period their conversion to Judaism took place. It was at first supposed that the story of their adoption of Judaism was purely legendary, but Harkavy has proved its genuineness both from Arabic and Slavonic sources. Jewish scholars were invited to the kingdom; synagogue and schools were established, Hebrew being used in the writings of the people. The names of their kings are sufficiently Jewish:—Obadiah, Hezekiah, Manasseh, Harukkah, Isaac, Moses, Nisi, Aaron, Joseph. It is claimed by some that only the kings and nobles were Jews, but the historic evidence is conclusive to indicate that the entire people were of that creed.

At the zenith of prosperity, the Chazars were a liberal and enterprising people—their supreme court of justice was composed of two Jews, two Christians, two Mohammedans, and one heathen. The Jewish population was large, many Jewish traders being proficient in Western and Eastern tongues, traveling in all directions, with products of the Orient. The Chazars had fisheries of their own, cultivated grains, fruits and the vine, in addition to exporting furs and supplying Constantinople with hides, fish, Indian goods and articles of luxury. As late as the ninth century the Russians of Kiev paid a yearly tax to the Chazars; but as the Russian monarchy attained greater power, a conflict was inevitable, and gradually the Chazars lost most of their possessions. The Crímea remained intact until 1016 when it was conquered by the Russians and Byzantines in combined force, when a scattering of the Chazar people took place—many withdrawing to the Caucasus and Hungary, and others being carried captive to Kiev. The majority, however, held to their native soil—the royal family emigrating to Spain. For several centuries the Crimea was known to European travellers as 'Gazaria' for Chazaria.

In the correspondence between Hasdai ibn Shaprut,

foreign minister to Abd al-Rahman, Sultan of Cordova, and King Joseph of the Chazars (960), a full authoritative account of which has been written by A. Harkavy, a clear light is thrown on the history of the Chazars and their status at that time. The genuineness of Hasdai's letter was long disputed but the great majority of scholars, Jewish and Christian, accept its historical character. Judah Hallevi, one of the most distinctive of the Jewish mediæval philosophers (1086—1140), has made the story of the Chazars the central scene in his *Cusari*, which has been translated into many languages, including English (1906).

CHEADLE, *chē′dl:* small, neat market-town of England, in the moorland dist. of the n. part of the county of Stafford, 14 m. n.n.e. of the town of Stafford, three m. from the Froghall station on the Churnet Valley branch of the N. Staffordshire railway, four m. from the Blyth Bridge station on the main line from Derby to Crewe. The town is in a pleasant vale, surrounded by hills mostly planted with fir and other trees. The parish church (St. Giles) was a very ancient structure, but was rebuilt 1837–38. A magnificent Rom. Cath. church, erected at the sole expense of John, Earl of Shrewsbury, was opened 1846. There are several dissenting chapels, various schools, a mechanics' institute, a large tape manufactory, and also one for silk. There are copper and brass works a short distance from the town, and coal and limestone abound in the vicinity. Pop. 5,000.

CHEAP, a. *chēp* [AS. *ceap*, cattle, price; Goth. *kaupon*, to deal; Icel. *kaupa*, to buy; Dut. *koopen;* Ger. *kaufen*, to buy]: low in price for the quality; not dear as prices go; common or little in value: N. in *OE.*, a purchase; a bargain. CHEAP′LY, ad. *-lĭ*, at a very moderate or low rate. CHEAP′NESS, n. lowness in price considering the real value. CHEAPEN, v. *chēp′n*, to lessen in value, either actually or apparently. CHEAPENING, imp. *chēp′nĭng:* ADJ. endeavoring by higgling to lower the price; becoming cheaper. CHEAP′ENED, pp. *-ĕnd.* DOG-CHEAP, a modern translation or accommodation of the older common phrase, GOOD-CHEAP, both signifying, an 'excellent bargain;' at a very low price.

CHEAP-JACK, n. *chēp-jăk* [AS. *ceapĭan*, to buy and sell; *cheap=chap*, a merchant]: a peddler; an itinerant dealer in a larger way going about country towns and fairs, —so named not because he is *cheap*, but because he is a *chap-jack*, *chapman*, or travelling merchant; a common and familiar corruption of *chapman* (see CHAP 3). *Note.*—CHEAP-JACKS are now known by their kind of auction-sales, offering an article at a price, and then adding article after article as an inducement for some one to give the price named for the original article.

CHEAT, v. *chēt* [see *escheat*, of which it is a corruption —the *escheaters* or *cheaters* were officers appointed to look after the king's escheats, giving many opportunities of op-

pression—hence *cheater* came to signify a fraudulent person]: to deceive and defraud; to impose on; to trick: N. a fraud committed by deception; a trick of dishonesty; an imposition or imposture; one who cheats. CHEATING, imp.: ADJ. fraudulent; tricky: N. fraud; deception. CHEAT'ED, pp. CHEAT'INGLY, ad. *-lĭ*. *Note.*—Wedgwood says that *cheat* in the old canting language of beggars and rogues meant a thing of any kind; *cheater*, a canter, a rogue; *to cheat*, to act as a rogue.—SYN. of 'cheat, v.': to defraud; cozen; gull; chouse; bamboozle; fool; outwit; beguile; circumvent;—of 'cheat, n.': deception; delusion; fraud; artifice; stratagem; finesse; guile; imposition; deceit.

CHEATING, in Law: an offense short of felony and falling under the head of misdemeanors. In American law it is defined as 'deceitful practices in defrauding or endeavoring to defraud another of his known right, by some wilful device contrary to the plain rules of common honesty.' Bouvier says: 'In order to constitute a cheat or indictable fraud, there must be a prejudice received, or such injury must affect the public welfare, or have a tendency to do so.' In common law, the fraud must be of a kind which could not be guarded against by ordinary prudence. The instrument of the cheat must not be mere words, but a sign or token of some kind, as a false brand on articles sold, false weights and measures, or loaded dice or marked cards in games of chance. In statute law cheating is known as 'false pretenses,' i.e., false representations with intent to defraud, by words or deeds concerning facts or events, past or present. The legislation of the various states differs much in details on this subject: see WEIGHTS AND MEASURES: FALSE PRETENSES: CHARACTER TO SERVANT.

CHEAT RIVER, *chēt:* in W. Va.; formed by the confluence in Tucker co. of Shaver's, Dry, Glade, and Laurel Forks, which rise among the Alleghanies. It flows n. and n.w. through Preston and Monongalia counties, between hills rich in coal and iron, and enters the Monongahela in Fayette co., Penn., just n. of the W. Va. line. The main stream is about 75 m. long, and varies greatly and rapidly in its volume of water; hence the name. The finest scenery of the Baltimore and Ohio railroad is along its banks.

CHECK, n. *chĕk* [F. *échec;* OF. *eschec*, a repulse, a rebuke—a metaphor taken from the game of chess, when a player is stopped by receiving *check* to his king: Pers. *sháh*, a king]: stop; restraint; continued restraint; curb; that which stops or controls; a term in chess; a pass, ticket, or token; variegated cloth woven in squares of different colors like a chess-board: V. to stop; to restrain: to moderate; to chide or reprove; to control; to make a move in chess threatening the king; to compare and examine papers or accounts to ascertain their accuracy—[to *check an account*, in the sense of ascertaining its correctness, is derived from the court of exchequer, where accounts were compared and corrected by means of counters upon a checked cloth, or by indented or checked tallies]. CHECK'ING, imp. CHECKED,

pp. *chĕkt.* CHECK'ER, n. *-ėr,* one who, or that which. CHECK'MATE, n. *-māt* [Pers. *sháh-mát,* king dead: Ar. *escheikh imât,* the sheik dies]: a movement that finishes a game of chess: V. to hinder from moving and so to finish; to defeat; to overthrow. CHECK'MATING, imp. CHECK'-MATED, pp. CHECK'BOOK, a book containing blank checks upon a bank. CHECK-ROLL, a list of servants in a household. CHECK'-STRING, a cord by which the occupant of a carriage may arrest the attention of the driver.—SYN. of 'check, v.': to restrain; control; curb; hinder; repress; moderate; rebuke; reprove; chide; mark; pause.

CHECK, in Finance: a money order drawn on a bank or banker, or person holding similar position. It differs from an ordinary bill of exchange in being usually payable on demand without days of grace. If not presented within a reasonable time, the holder cannot claim against the drawer should the banker fail; should the drawer die meantime, the check is not payable. In case of forgery or of a check raised to a higher amount than it was drawn for, the banker bears the risk, except as the fraud might be facilitated by carelessness in drawing. Of late years checks are usually drawn not to bearer but to order, and the holder's indorsement constitutes a receipt and secures the bank. When the holder is unknown to the banker, he is required to procure identification. To draw a check with knowledge that one has no funds is a fraud, and when goods are thus procured the sale can be rescinded. English law requires the check to bear a penny stamp: United States law required a two cent stamp till 1883, also during war with Spain 1898. A 'crossed check' (Eng., 'cheque') has two transverse lines drawn across it, which make it payable only through a banker. If 'specially crossed,' it bears a particular banker's name between the lines, and is payable only by him. The holder may cross a check generally or specially. In Great Britain obliteration of the crossing, like any alteration of a check except as provided for by the Crossed Checks Act of 1876, is a felony.

CHECKER, or CHEQUER, n. *chĕk'ér* [OF. *eschequier,* a chess-board, an exchequer—from *eschec,* a check at chess]: in OE., to variegate by cross-lines; to form into squares like a chess-board by lines or stripes; to diversify; to vary or mix with different qualities, scenes, or events. CHECK'-ERING, imp. CHECK'ERED, pp. *-érd:* ADJ. marked out or varied with squares or stripes of different colors, as *checkered* cloth; crossed with good and bad fortune in the career of life. CHECKERS, or CHEQUERS, n. plu. in OE., device of alternate white and black squares used as a tavern-sign; a game of draughts, so called because played on a board divided into squares (see DRAUGHTS). CHECK'ER-WORK, work having a pattern of squares varied alternately in colors or materials.

CHECKERBERRY, or WINTERGREEN: see GAULTHERIA.

CHECKY, *chĕk'ĭ* [Fr. *échiqueté*]: in *her.,* denoting that the field or any charge is composed of small squares of

different tinctures, usually metal and color. N. a shield so marked.

CHEDDAR, n. *chĕd'dér:* a kind of cheese, so named as having been first manufactured at *Cheddar*, in England.

CHEDDAR, *chĕd'der:* village in Somersetshire, on the s. side of the Mendip Hills, two m. s.e. of Axbridge, with a level country to the s. It lies at the entrance of a deep rocky gorge nearly a mile long, which is overhung by stupendous mural limestone precipices, containing caverns —one being 300 ft. long—filled with fantastic stalactites and stalagmites. The celebrated cheddar cheeses are produced on the rich grass farms around. The church is supposed to have been built about 1400, and has a sculptured stone pulpit. Pop. of parish about 2,500.

CHEDUBA, *che-dô'bâ:* island off Aracan, in the Bay of Bengal, stretching from lat. 18° 40′ to 18° 56′ n., and from long. 93° 31′ to 93° 50′ e.; about 240 sq. m. With the adjacent mainland, it was ceded to the British at the close of the first Burmese war. The soil is fertile, yielding rice, tobacco, sugar, indigo, cotton, hemp, and large quantities of a vegetable oil, fitted equally for burning and for varnishing. The principal mineral is petroleum. The coast presents earthy cones, which emit mud and gas, and about 100 years ago a severe earthquake is believed to have extended the limits of the island. Pop. about 25,000.

CHEEK, n. *chēk* [AS. *ceac*, the cheek, the jaw; Dut. *kaecke;* Sw. *kek*, the jaw]: the side of the face below either eye; in *mil.*, the side of an embrasure; in *slang*, bold, unblushing impudence. CHEEKY, a. *chē'kĭ*, in *slang*, possessing bold, brazen impudence; forward and impudent. CHEEK-BY-JOWL [AS. *geagl*, a jaw, a jowl]: near; close; side-by-side. CHEEK-BONE, the prominent bone of the cheek; the malar bone. CHEEKS, n. plu. two upright, equal, and similar parts of any piece of timber-work; the two solid parts upon the sides of a mortise; the projection on each side of a mast.

CHEEP, v. *chēp* [an imitative word: Scot. *cheiper*, a cricket]: to make a shrill noise like a young chicken. CHEEP'ING. imp. CHEEPED, pp. *chēpt.*

CHEER, v. *chēr* [OF. *chiere;* It. *cera*, the countenance. F. *chère*, the face, favor, entertainment—from mid. L. *cara*, face, countenance: comp. Gael. *cairdeas*, friendliness; *cairdich*, to make friendly]: to make pleasant and friendly; to comfort; to gladden; to infuse life and spirit into; to encourage; to become gladsome; to receive with shouts of joy; to applaud: N. face of countenance, as expressing cheerfulness; that which brings joy and gladness; courage; spirits; a joyful shout; applause; mirth; provisions for a feast. CHEER'ING, imp.: ADJ. animating; encouraging: N. utterance of shouts of joy; loud acclamations. CHEERED, pp. *chērd*, CHEER'INGLY, ad. *-lĭ.* CHEER'ILY, ad. *-ĭ-lĭ*, with spirit; in good spirits. CHEERFUL, a. *chēr'ful*, lively; in good spirits; full of life. CHEER'FULLY, ad. *-lĭ.* CHEERFULNESS, n. the state of being in good spirits;

liveliness; gaiety. CHEERLESS, a. *chēr′lĕs*, without cheer; cold; gloomy; dispiriting. CHEER′LESSLY, ad. *-lĭ*. CHEER′LESSNESS, n. CHEER′ER, n. one who. CHEER′Y, a. *-ĭ*, gay; sprightly. CHEER UP, to become cheerful; to enliven: INT. have greater courage and hopefulness.—SYN. of 'cheer, v.': to animate; encourage; enliven; exhilarate; comfort; console; solace; gladden; inspirit; refresh;—of 'cheerful': merry; sprightly; gay; mirthful; jovial; lively; gleeful; vivacious; sportive; animated; joyful; blithe; lightsome; gladsome; airy; jolly.

CHEESE, n. *chēz* [AS. *cése*, curdled milk; Gael. *caise;* W. *caws*, cheese; L. *casĕŭs*, cheese; Fin. *kasa*, a heap]: the curd of milk pressed into a mass of various shapes and sizes, and suffered to dry. CHEESY, a. *chē′zĭ*, having the taste or form of cheese. CHEESE′CAKE, n. a sweet cake made with sugar, butter, and soft curd; any delicately flavored preparation of custard. CHEESE-HOPPERS, the larvæ or maggots of a fly found in decayed cheese. CHEESE-MITE, a very minute insect found plentifully in old cheese. CHEESE-PRESS, and CHEESE-VAT, the one for pressing and the other for holding the curd to be formed into a cheese; the old method of pressing was the mere piling of weights on the cheese vat, or sometimes a screw was used; but there are now numerous ingenious and convenient forms of cheese-press, generally depending on the action of a lever. CHEESE-MONGER, n. *-mŭng′gėr* [AS. *mangere*, a trader]: one who deals in or sells cheese. CHEESE-PARING, the outer rind or worthless paring of skin of the cheese, the preservation for use of which was considered carrying economy to excess.

CHEESE: the curd of milk, including principally the casein and fat, coagulated, cooked, drained, and pressed into solid form. The standard factory-made American cheese is practically identical with English Cheddar cheese, and is often so-called. The process of manufacture is practically the same in all factories. A milk rich in fat is preferred, the cheese being nearly all fat and casein (q.v.). The first process of manufacture is to heat the milk (preferably sweet milk) to about 84° F. It is then tested with rennet for ripeness. If the rennet coagulates the test of milk in 17 to 20 seconds, the milk is sufficient ripe for treatment. Enough rennet is then added to the supply of milk to coagulate the whole in 25 or 30 minutes. The proportions vary with conditions, but about four ounces of rennet extract to 100 gallons of milk is perhaps an average quantity. When the milk is coagulated, the solid portion or curd in the vat is separated from the watery portion, by allowing the latter to drain off. Gang knives are then brought into use, to cut the curd into cubes of a third of an inch or more, the knives being set a little less than half an inch apart and passed through the curd horizontally and perpendicularly. After cutting, the curd is gently agitated to prevent settling. This allows the curd to shrink, and tends to expel a portion of the whey. The stirring may be done with a curd-rake, but

factories more commonly employ what is termed an automatic curd-agitator, which is attached to the vat and driven by steam power. The mass of curd is next heated very slowly to about 92° F. This cooking process may continue several hours, lasting until the operator finds that the curd will string about a quarter to a third of an inch on a hot iron. The whey is then drawn off. The curd is next turned and piled, to rid it of the excess of moisture. When deemed sufficiently solid it is ground and salted. The grinding may be done in one of several kinds of mills, a common form having two cylinders with teeth rotating toward each other, which operation picks the curd to pieces. After grinding, the curd—or cheese, as it may now be called,—is dipped and put into hoops to give it form for pressing, Common sizes of hoops are $14\frac{1}{2}\times10$ and $13\frac{1}{2}\times6$ inches. An iron bandage or rim is placed about the hoop to give it solidity, and a cloth wrapped about it to keep the cheese together and secure cleanliness. Pressure is then applied, at first lightly, and then increased, the cheese being usually turned over during the operation. The pressure is maintained for 16 to 18 hours, after which the cheese is ready to be cured. Curing-rooms are built both above and below ground, the latter being preferred as being easier to maintain at a cool temperature. High temperature is very deleterious to cheese, diminishing its value by melting and leaking of fat, while the texture and flavor are also impaired. A temperature below 65° F. should always be maintained in the curing-room, and 40° is better. Ventilation must be provided, and the usual arrangement is an upright draft-pipe, run high enough to catch the wind, and with a vane at the top to turn the mouth of the funnel to the wind. The process called ripening takes place in the curing-room, determining the particular flavor of the cheese. The ripening is caused by bacteria, as is proven by making cheese from sterilized milk, in which case it retains the flavor of new-made cheese for a very long period. More than $\frac{4}{5}$ths of the cheese made in the U. S. is manufactured according to this process. The remainder is farm-made, or else manufactured by some other process in imitation of some foreign cheese.

There are a number of varieties of foreign cheese which owe their difference partly to the food of the cows, but in greater part to differences in the mode of treating the milk. *Stilton Cheese* is made in Leicestershire, England, by adding the evening's milk to the new milk of the next morning; and as there is always more trouble in expelling the whey from curd containing butter, there is a difficulty in preparing this variety of cheese from its liability to fermentation and bursting. *Cheshire* and *Double Gloucester* are made from the whole milk; *Single Gloucester*, from half new milk and half skimmed milk. *Gouda Cheese* is prepared in Holland from skimmed milk curdled by muriatic acid instead of rennet, and for this reason it is not infested with mites. Holland exports annually about

thirty millions of pounds of cheese, the greater portion going to England. *Suffolk Cheese* is made from skimmed milk. *Parmesan Cheese*, obtained from Parma in Italy, also is made from skimmed milk, and owes its fine, rich flavor to the superior herbage on the banks of the river Po. This cheese is kept three or four years, and the outside polished with linseed oil and charcoal till it shines like ebony. *Swiss Cheese* is flavored with herbs, and especially that of Gruyère, which is very pleasant to the taste. Gruyère cheeses weigh 40–60 lbs. each, and are exported in large quantities. *Dunlop Cheese*, though nowhere so well made as in the parish of Dunlop, in Ayrshire, is now manufactured in the dairy districts of Scotland generally. The cheeses are of various sizes—from a quarter to a half hundredweight. Sometimes the entire milk is used, but generally the cream is removed from the evening's milking. *Roquefort* cheese and *Kachkaval* (Bulgarian) are made from sheep's milk.

As an article of diet, cheese is highly nutritious; but from its costive properties, it is mainly used as a condiment in small quantity after an ordinary meal, and is then serviceable in giving an impetus to the process of digestion. To serve the purpose of a digestive, cheese must be old and partially decayed or moldy. It then acts as leaven, and causes chemical changes gradually to commence among the particles of the food which has previously been eaten, and thus facilitates the dissolution which necessarily precedes digestion.

A small proportion of the cheese used in the U. S. is imported. From 5,000.000 to 7,000,000 pounds a year of Swiss cheese enter, also some from France, Germany, and England. There are about 3,300 cheese factories in the U. S., of which over 570 make both butter and cheese. New York and Wisconsin are the greatest cheese-producing states, aggregating over two-thirds of the total production of the nation, amounting to nearly 282,000,000 pounds. At the average wholesale price of 10 cents a pound, this is worth $30,000,000.

Prior to 1850 practically all the cheese made in the U. S. was a farm product. Since that date farm dairies have been largely superseded by factories to which milk is taken from surrounding districts; and by the employment of greater and more uniform skill and experience a better quality is obtained. Government statistics include the production of cheese with butter and condensed milk, the combined annual output being valued at over $131,183,000. Large shipments of U. S. cheese are made to Great Britain, Canada, and other countries, the annual export amounting to over 54,059,000 pounds, valued at $5,549,254.

CHEESE-HOPPER: the larvæ of *Piophila casei* or *Tyrophaga casei*, a small *dipterous* (two-winged) fly, of the large family *Muscides*, the same to which the house-fly, blow-fly, etc., belong. The perfect insect is about a line and a half in length, mostly of a shining black color; antennæ, fore-

head, and some parts of the legs rufous. It is a pest of dairies and store-closets, laying its eggs in cracks or crevices of cheese, the destined food of its larvæ. To preserve cheeses from this pest, it is of advantage to brush or rub them frequently, and to remove all cracked or injured cheeses from large stores, besides keeping them dry and in well-aired places. The same rules are applicable to their preservation from the other insect larvæ by which they are sometimes infested, of which the most notable are those of the bacon beetle (see DERMESTES), and of another species of dipterous fly, *Musca corvina*.

CHEETAH, *chē'ta*, or CHITTAH, *chĭt'tâ*, or HUNTING LEOPARD (*Felis jubata*, or *Cynailurus jubatus*); animal of the feline family, but differing from all the rest of that family in its longer and narrower feet and less retractile claws, which are also more blunt and less curved. With these peculiarities are associated a greater length of limbs than is usual in feline animals, adapting it to take its prey by running rather than by leaping, and an intelligent and tractable disposition, constituting an additional point of resemblance to dogs; with which, however, the form of the head and the internal anatomy have nothing in common, but are entirely feline. The cheetah is in size about equal to a leopard, but the body and limbs are longer. It is very widely distributed, being found in Senegal, s. Africa, Persia, India, Sumatra, etc. Its geographic range extends as far n. as the Caspian Sea and the steppes of the Kirghiz Tartars. The Asiatic species described as *Felis venatica* appears to have been fully identified with *F. jubata;* and differences in the quantity of mane, and other unimportant particulars, may probably sometimes have resulted from domestication; for this animal has been long domesticated and employed in the chase, both in Persia, where it is called *Youze*, and in India. Deer and antelopes are the game principally hunted with the cheetah, and packs are kept by Indian princes. The head of the cheetah is kept covered with a leather-hood till the game is discovered, when the hunting party advancing cautiously to within 200 yards of it, the hood is taken off, and the cheetah stealthily creeps toward the herd, taking advantage of every bush and inequality for concealment, till, on their showing alarm, he is among them at a few bounds, and striking down his victim with a blow of his paw, instantly tears open his throat, and begins to suck the blood. It is then somewhat difficult to withdraw him from his prey, which is generally done by offering him meat. If unsuccessful the cheetah does not attempt to follow the herd by running—nor does this animal seem to possess the power of maintaining speed through a lengthened chase—but slowly, and as if ashamed, creeps back to the hunters. The ancient monuments show that this leopard was employed by the Assyrian and Egyptian sportsmen of remote antiquity; and it is known that in the 14th century the returning Crusaders introduced the cheetah into Europe where it was used for some centuries.

CHEEVER, *chē'ver*, Ezekiel: 1615, Jan. 25—1708, Aug. 21; b. London. He emigrated 1637, was one of the three founders of New Haven, 1638, taught school there 1638–50 at Ipswich, Mass., 1650–61, and at Charlestown 1661–70. Invited by the authorities of Boston to take charge of the Latin School, 1670, he retained that post, with unimpaired faculties, till his death at the age of 93. His *Accidence*, written at New Haven, went through 20 editions, and was long the chief guide to Latin in New England. He published also *Scripture Prophecies Explained, in three Short Essays*. Some poems by him, with his funeral sermon by Cotton Mather, were printed at Boston, 1828.

CHEF-D'ŒUVRE, n. *shĕf-dō'vr* or *shā-* [F., chief of work]: a master-piece; a very fine work of art.

CHE-FOO, *chē-fō* (*Chi-fu*): Chinese treaty port, on the n. side of the peninsula of Shan-tung, province of Shan-tung; 30 m. e. of Tang-Chow-Foo. Since it was opened to foreign trade, it has become important; and there are a custom-house, British consulate, and a considerable foreign settlement. Imports are chiefly of iron, woolen, and cotton goods, and opium. The 'C. Convention,' which opened C. and two other ports to foreign commerce, was agreed to 1876. Pop. 33,000.

CHEGOE, n. *chĕg'ō* [of Peruvian origin: Sp. *chico*, small]: in tropical countries, a small insect that enters the skin of the feet in man; also written Chigger, *chĭg'gėr;* Chigoe, *chĭg'ō;* Jigger, *jĭg'gėr;* Chigre, *chĭg'ėr;* and Chegre, *chĕg'ėr*.

CHEILOANGIOSCOPY, *kī-lō-ăn-jĭ-ŏs'ko-pĭ:* method of observing the circulation of the blood invented by Dr. C. Hüter of Germany. The patient's head is fixed in a frame to which are attached a microscope and a lamp. The lower lip is drawn out and fixed by clips on the stage of the microscope; on its inner surface a condenser throws a strong light, and the microscope with a low-power objective is brought to bear on the blood-vessels, which at first appear filled with a red injection. On focusing one small vessel, the blood stream can be seen in motion, with its red corpuscles as specks on the current; the flow of these in the capillaries is said to be very beautiful. The colorless corpuscles also appear here and there as white specks on the red stream. Other phenomena besides those of the circulation may be observed by this method, the primary use of which is to gain help in diagnosing disease by detecting anything abnormal concerning the blood. The phenomena of blood stagnation—its change from red to purple, accompanying the stoppage of its flow—may be witnessed by a slight pressure, or by touching the lip with ice, and for a longer time by re-agents, as glycerine or ammonia.

CHEIRACANTHUS, n. *kī'răk-kăn'thŭs* [Gr. *cheir*, the hand; *akan'tha*, a thorn]: a small fossil fish armed with defensive spines. Chei'role'pis, n. *-rō-lē'pĭs* [Gr. *lepis*, a scale]: a fossil fish of the Old Red Sandstone, having lozenge-shaped ganoid scales, and a great development of its pectoral and ventral fins. Cheiroptera, n. plu. *kī-rŏp'-*

*tĕr-ă* [Gr. *pteron*, a wing]: the systematic name for bats and the bat kind (see BAT). CHEIROP'TER, n. one of the *cheiroptera*. CHEIROP'TEROUS, a. *-ŭs*, pertaining to. CHEIRU'RUS, n. *-rō'rŭs* [Gr. *oura*, a tail]: in *geol.*, a genus of Lower Silurian trilobites, so termed from their tail presenting four or five finger-like spines.

CHEIRAN'THUS: see WALLFLOWER.

CHEIROMANCY: see CHIROMANCY.

CHEIRO'MYS: see AYE-AYE.

CHEIRONECTES, *kī-rō-nĕk'tēz:* genus of marsupial quadrupeds, differing from the opossums chiefly in having webbed feet and aquatic habits. *C. palmatus* or *C. Yapock*, sometimes called the Yapock opossum, or simply the Yapock, from the S. American river of that name, is common in many rivers of Brazil and Guiana. It has a soft wooly fur, the color of the upper parts of the body is gray with large transverse patches of black connected with a dorsal black line, the breast and belly white; the tail is long very thick at the base tapering to the tip, and, except at the base, covered with scales. The cheek-pouches are very large. Crustaceans are said to form the chief food of this animal, which is interesting as a sort of marsupial representative of the otter.

CHEIROTHERIUM, n. *kī-rō-thē'rĭ-ŭm* [Gr. *cheir*, the hand; *thēriŏn*, a wild beast—*lit.* hand-beast]: in *geol.* name formerly given to an animal known to science only by its hand-like foot-prints in certain sandstones of the Trias age. The remains of the animal having been found, and its structure made out, this name has given place to the more characteristic one of *Labyrinthodon* (q.v.)

CHEKE, *chēk*, SIR JOHN: 1514, June 16—1557, Sep.; b. Cambridge, England; notable as one of the revivers of classical literature in England during the 16th c. Entering the Univ. of Cambridge, he applied himself assiduously to the study of Latin and Greek, particularly the latter language, then much neglected in England. He labored earnestly to advance the study of the Greek language and literature; and when the first professorship of Greek was founded in Cambridge by King Henry VIII., about 1540, C. was appointed prof. A new mode of pronouncing Greek which he introduced was assailed by Bishop Gardiner, chancellor of the univ.; notwithstanding C.'s system prevailed. C. was for a time preceptor of the prince, afterward Edward VI., whose elevation to the throne secured him rank, wealth, and honor. But being a Protestant he was stripped of everything when Mary came to the throne, though other lands were given to him on his returning to the Rom. Cath. Church, which he did to escape burning, the only alternative offered him by Cardinal Pole. His recantation preyed on his mind so much, that he died in the course of the following year. He left several works in Latin, and a pamphlet in English; and among his MSS. was a translation of the Gospel by Matthew, exemplifying

a plan for reforming the English language by eradicating all words save those derived from Saxon roots.

CHE-KEANG, *chē-ke-âng':* one of the e. and maritime provinces of China, smallest of the eighteen; area 39,150 sq. m. Situated in the s. portion of the great plain, it has great fertility, and produces silk, tea, and rice in abundance Its cap., Hang-chow (q.v.), an important and populous city, is the metropolis of the silk districts. 'Above is Paradise,' say the Chinese, 'below are Soo-chow and Hang-chow.' Both these places were taken by the Taeping rebels 1860. Ning-po (q.v.) is the principal port of the province. Pop. 11,843,000.

CHELÆ, n. plu. *kē'lē* [Gr. *chēlē*, a claw]: applied particularly to the first pair, or largest claws or pincers of the crustaceans, etc. CHELIF'EROUS, a.*-lĭf'ėr-ŭs* [L. *fero*, I bear]: having claws as a crab. CHELIFORM, a. *kē'lĭ-fawrm* [L. *forma*, a shape]: having the form of a claw. CHELATE, a. *kē'lāt*, having chelæ or two-cleft claws.

CHELICERÆ, *kē-lĭs'ėr-ē* [Gr. *kēlē*, a claw; *kĕras*, a horn]: antennal claws, e.g. the prehensile claws of the scorpion; modified antennæ which in some of the crustaceans, and in most of the arachnida, serve a purpose corresponding with that of the mandibles of insects in the cutting, tearing, or bruising of food. They move, however, up and down in a direction contrary to that of the mandibles of insects.

CHELIFER, *kēl'ĭ-fėr:* genus of *Arachnida* (q.v.) of the order *Trachearia*, and of the family to which, from their resemblance to scorpions without tails, the name *Pseudo-scorpions*, or false scorpions, has been given, the true scorpions belonging to the order *Pulmonaria*. The genus C. consists of minute species in which this resemblance is very strong. The palpi are elongated and armed with pincers. The species live under the loose bark of trees, in chinks of old furniture, etc. One species, *C. cancroides*, about a line and a half in length, is frequently to be seen in old books, herbaria, etc., and is called the *Book Scorpion;* it is said to be useful as feeding on the insects which are most destructive to books and collections in natural history.

CHELM, *kĕlm* or *ċhĕlm*, or CHOLM, *ċhōlm:* town of Russian Poland, govt. of the same name; 126 m. s.e. of Warsaw. It is the seat of a United Greek bishop, and has a theological seminary. The Poles were defeated here by the Russians, 1794, June 4. Pop. about 7,000.

CHELMSFORD, *chĕmz'ford:* county town of Essex, England, near the centre of the county, at the confluence of the Chelmer and the Cam, 29 m. n.e. of London. The town has a large agricultural trade, iron foundries, corn mills, breweries, electric engineering and light works and manufactures of farming implements, leather, and malt. It is the seat of assizes and local courts, and has a grammar school founded by Edward VI. Pop. 12,600.

CHELONIA, *ke-lō'ni-a:* order of reptiles, corresponding

in extent with the genus *Testudo* of Linnæus, and of which the most obvious distinguishing character is the inclosure of the whole body in a protective covering connected with the skeleton, so that only the head, the tail and the limbs are protruded, the limbs, four in number, all formed on the same plan, are used by some as feet for walking on dry ground, by others as paddles for swimming. The bony covering consists of two principal parts called the *carapace* and the *plastron;* the carapace serving as a buckler for the upper parts and the plastron for the lower parts of the body. The carapace is formed from the ribs, of which there are eight pair, and from the annular parts of the dorsal vertebræ, expanded into plates, which are joined to each other by dentelated sutures, so that the whole acquires great firmness, and the dorsal vertebræ are rendered immovable. The plastron is formed of pieces which represent the sternum or breast-bone, and which are ordinarily nine in number. So compact and strong is the case of some of the tortoises that it will bear immense pressure without injury, the arched form of the carapace adding to its strength, while the creature, destitute of other means of defense, and incapable of flight, finds safety, at least in its mature state, from all enemies but man, by drawing its head, tail, and limbs within the protecting case, which in some, called box-tortoises, has certain plates movable, so as more completely to inclose them. The turtles and other aquatic chelonians cannot thus withdraw their head, tail, and limbs from danger, but the greater activity of their movements compensates for this.

The firmly-fixed ribs not admitting of the movements by which respiration ordinarily takes place in other vertebrate animals, the Chelonia gulp down air, which they inhale entirely through the nostrils; first filling the cavity of the mouth by elevating the hyoid bone, and then, by depressing it, forcing the air into the lungs, while the inner aperture of the nostrils is closed by the tongue. In other respects, as to aëration and circulation of blood, they resemble other reptiles.

The jaws are not furnished with teeth, but act in a manner more resembling that of the mandibles of birds, being, like them, hard, sharp, and horny. The food of the Chelonia is various. Some of them, among which are all the land-tortoises, subsist exclusively on vegetable food; some of the aquatic Chelonia pursue and eat other aquatic animals.

All the Chelonia are strictly oviparous. Their eggs are hatched by the heat of the sun alone; they lay a great number at a time, which are covered with a calcareous shell, like those of birds. The eggs of fresh-water tortoises are in some places a lucrative article of commerce, from the quantity of oil obtained from them.

The Chelonia are found only in the warmer parts of the world, but their numbers in some places are astonishingly great. A few species occur in the southern parts of

Europe, and a number of species are found in the temperate parts of N. America.

All the species are extremely tenacious of life; they are capable of extraordinary abstinence, and of living long after having sustained injuries which would have been immediately destructive to almost any other animal. They are remarkable also for longevity.

The flesh of some kinds of turtle is well known as an excellent article of food. The eggs of some are equally an esteemed delicacy. Tortoise-shell (q.v.) and the oil already mentioned are the only other valuable products of the order.

See the titles of the different genera and species: also Reptiles.

*Fossil Chelonia.*—Foot-tracks on the Triassic sandstone of Dumfriesshire were referred by their discoverer, Dr. Duncan, to tortoises. Similar tracks have been noticed in Devonian and Oolite strata. Their vagueness, however, does not indicate with certainty the animals which produced them. The first indisputable evidence of chelonian life occurs in the Upper Oolite, where the remains of several pond-tortoises and two or three turtles have been observed. In the newer deposits, they increase in number, so that between seventy and eighty species have been described from the Tertiary strata. In the Eocene deposits of the London Clay, at the mouth of the Thames, there occur the remains of more species of true turtles than are now known to exist in the whole world. Some of these fossil Chelonia were of a size proportioned to their colossal companions; as, for instance, the gigantic land tortoise (*colossochelys*) of the Sewalik Hills, whose carapace was as much as 20 ft. in length.

CHELONIAN, a *kē-lō′nĭ-ăn* [Gr. *chelōnē*, the tortoise]: pertaining to the *Chelōnĭă* or tortoise and turtle tribe.

CHELSEA, *chĕl′sē:* city of Suffolk co., Mass., n.e. of Charlestown, and n. of East Boston, from which it is separated by the Mystic river and by Chelsea creek, an inlet of the sea. Originally a part of Boston, it was set off 1738, and incorporated as a city 1857. The oldest ferry in the United States runs from the foot of Winnisimmet St. to that of Hanover St., Boston, 1⅛ m. The Chelsea bridge, 3,300 ft. long, connects with Charlestown, and street-cars go that way to Boston. The Eastern and Grand Junction railroads pass through Chelsea. Here are the U. S. Marine Hospital, a naval hospital connected with the navy-yard at Charlestown, a soldiers' home, court-house, city hall, numerous schools, churches, the Fitz Public Library, Odd Fellows' and Masonic halls, an academy of music, Union Park, and public playgrounds. The city is divided into 4 wards, governed by a mayor, 8 aldermen, and 19 common councilmen. The water-works are supplied from Mystic Lake, through Charlestown. While many residents do business in Boston, Chelsea is a manufacturing centre, with over 300 different establishments and an invested capital of $8,211,682, value of products, $10,333,

549, number of employees, 3,332. The principal manufactures are foundry and machine shop products, curried leather, and cotton goods; after these come tobacco, rubber, linseed oil, woolens, brushes, mattresses, paper boxes, soap, etc. Chelsea has grown steadily within the last half century. Pop. (1910) 32,452.

CHELSEA: suburb of London, now an integral part of the metropolis, in Middlesex, on the left bank of the Thames, 4½ m. w.s.w. of St. Paul's. The river is here crossed by a fine iron bridge. Many of the nobility and gentry, and persons distinguished in literature formerly resided at Chelsea, and some of its coffee-houses were much resorted to by pleasure parties in the 17th and 18th c. The house and grounds of the Earl of Ranelagh were a favorite resort as late as 1803; and Cremorne was a place of popular amusement. Chelsea has water-works to supply London, a chain-pier, and floor-cloth factories, besides a training-college for male, and another for female teachers, the royal military hospital and the asylum for soldiers' children. Pop. (1901) 73,856.

CHELSEA HOSPITAL: an asylum in Chelsea, suburb of London, for disabled or superannuated soldiers. The building was commenced 1609 as a Prot. theological seminary, by Dr. Matthew Sutcliffe, dean of Exeter, and James I. gave it a charter, 1610, as *King James's College*. When Sutcliffe died, 1629, the building was less than half finished, and the students were only 15 in number. Shortly after this the scheme was abandoned and the building used for various purposes. It was then rebuilt (1682–90) by Sir Christopher Wren, and made into a hospital for disabled soldiers by Charles II. By a warrant issued 1684, one day's pay per year, and two in leap-years, was deducted from soldiers' pay for supporting Chelsea Hospital. This deduction has long ceased, the hospital being maintained by parliamentary grant. The hospital has accommodation for about 600 persons, besides officers. Attached are 40 acres of land, used as public gardens and exercise ground. It is governed by a board of commissioners, comprising *ex officio* the lord pres. of the council, the first lord of the treasury, and the secretaries of state; but the more immediate management is in the hands of about 120 persons, of whom 20 are military officers, 20 civil officers, and the rest subordinates.

The establishment is maintained for the *in-pensioners* of the British army, who in the army estimates are set down at 550. These in-pensioners, besides board, lodging, clothing, washing, medical aid, etc., receive a small sum in money, varying from 5*s*. 3*d*. per week for a color-sergeant, down to 7*d*. per week for a private soldier. They are all dressed in uniform—red, with blue facings—and are treated as a garrison, in respect to guards, sentinels, etc. There is a certain degree of choice open to the men, as to whether they will be *in* or *out* pensioners. The out-pensioners, who are more than a hundredfold as numerous,

receive sums of money varying from 1½*d.* to 3*s.* 10*d.* per day for life, as a reward for past services. Vacancies in the hospital are filled up once a quarter, and every person admitted must give up his out-pension before he can become an in-pensioner. Doubts have frequently been expressed as to the usefulness of this expenditure; it is exceptional in its character, and the arrangement to which it refers is not in much favor among the soldiery.

CHELTENHAM, *chĕlt'nŭm:* town, parliamentary borough, and fashionable watering-place, in the county of Gloucester, eight m. n.e. of Gloucester; in a picturesque valley on the Chelt, a small stream which rises in the adjacent hills, and flows into the Severn. It is sheltered on the e. and s.e. by a semi-circle of the Cotswolds. It owes its celebrity and rapid increase to its mineral springs, of which there are several varieties. The chief street is upward of a mile long, right and left of which are spacious and elegant squares and crescents, and innumerable villas lately erected for the accommodation of the numerous visitors. Attached to the spas are handsome pump-rooms, with tasteful grounds, avenues, saloons, lodging-houses, and public promenades among the finest in England, besides many fine mansions in and around the town. It has ten churches and a number of dissenting chapels. Of late years, Cheltenham has become famous for its public schools, the oldest of which is its endowed grammar-school, capable of educating 300 scholars; but the largest, and now the most celebrated, is its proprietary college, for the sons of gentlemen, a noble institution, educating, upon an average 600 pupils. There are also a ladies' college, a junior proprietary school, and a number of private scholastic establishments. There are public assembly-rooms in the town, which is also much resorted to in the winter for its hunting. It has two clubs, and several weekly newspapers. Cheltenham returns one member to parliament, and has been a municipal borough since 1876. It has no manufactures of any importance. Cheltenham was only a village in 1716, when the first spring was discovered. It gradually increased till 1788, when the benefit received by George III. from its waters suddenly made it a resort of fashion, a position it has since maintained. Pop. 49,500.

CHEM'IC: name given to Bleaching Powder by those engaged in chemical works, often called *bleach* in this country.

CHEMICAL, a.: see under Chemistry. A chemical symbol consists of the first letter of the Latin name of the element to be indicated, but when the same letter forms the initial of two or more, another letter in small character is added to distinguish between them, thus O for oxygen; C=carbon; Cl=chlorine; Ca=calcium; Fe=ferrum or iron; Ag=argentum or silver, and so on.

CHEMICAL ANALYSIS: see Analysis in Chemistry.

CHEMIN DES RONDES, *shĕ-mĕng′ dā rŏngd′* [F. *chemin*, a passage or road, *des*, of; *rondes*, the patrols]: in a *fortification*, a beam between the exterior slope and the escarp, a masonry wall being erected on the side of the latter, whose object is to enable the officers to go their rounds without crossing the ditch.

CHEMISE, n. *shĕ-mēz′* [F. *chemise;* Sp. *camisa*, a chemise—from mid. L. *camĭsĭă* and *camĭsa*, a linen inner garment]: an under garment worn by females; a shift; a wall lining any earthwork in order to support it. CHEMISETTE, n. *shĕm′ĭ-zĕt′*, an under waistcoat for a female.

CHEMISTRY, n. *kĕm′ĭs-trĭ* [Ar. *kimĭă*, the occult art; It. *chimica;* F. *chimie*—from mid. L. *chimĭă*, the secret art of procuring gold—formerly supposed to come from Gr. *chumos*, juice, hence the modern spelling]: the science that ascertains the nature and constituent parts of any body, investigates the laws that regulate the action of bodies on each other, and determines in what proportion their elements unite. CHEM′ICAL, a. *-ĭ-kăl*, pertaining to chemistry. CHEM′ICALLY, ad. *-lĭ*. CHEM′IST, n. one skilled in chemistry. CHEM′ICALS, n. plu. *-kălz*, substances used for producing chemical effects. CHEMICAL TOYS, mostly pyrotechnic; recommended as illustrating to the young the rudiments of chemistry; but probably more dangerous than efficient for such use. 'Pharaoh's Serpents' (see SULPHOCYANOGEN), are highly poisonous, and during combustion evolve dangerous vapors. *Larmes du Diable*, or 'Crocodiles' Tears,' are formed of metallic sodium, burn with extreme violence if thrown into water, or even if moistened with water or heated, and scatter particles of caustic alkali, which may inflict serious burns. 'Sunshine in Winter Evenings,' 'Fiery Swords,' etc., are formed of magnesium, and, like the preceding, may cause serious burns. Pyroxyline, identical with the highly explosive gun-cotton, is the active agent in the various toys known as 'Will-o'-the-wisp Paper,' 'Parlor Lightning.' "Fireflies,' etc. ORGANIC CHEMISTRY, that which treats of the substances containing carbon. INORGANIC CHEMISTRY, that which treats of the substances which form mineral bodies. PRACTICAL or APPLIED CHEMISTRY, that which treats of the products of chemistry useful in the arts, and for economical purposes. PURE CHEMISTRY, that which treats of the elemental constitution of substances, and of the laws of combination.

CHEMISTRY. It is impossible to give a definition of chemistry which is at once brief and reasonably accurate. It is distinguished, on the one hand, from the abstract sciences, such as mathematics and logic, which deal solely with mental conceptions, and on the other, from such purely concrete sciences as geology and botany, which deal essentially with definite concrete aggregates of matter, such as a bed of sand or an oak tree and their relation to other beds of sand or to other trees. Chemistry does not

enquire into the history of the bed of sand, nor as to its extent, but it regards all sand as being alike provided it exhibits the same properties of color, hardness, behavior towards other substances, etc. Indeed it often relegates some of these properties to physics, provided it can be shown that they are not dependent on a difference in composition. Thus ice, water and steam are regarded by the chemist as identical substances, whereas, to the physicist, who is not primarily concerned with their composition, but with such properties as their density, viscosity, hardness, volatility, etc., they are entirely separate materials. In many cases it is impossible to draw a sharp line between chemistry and physics. The chemist often takes advantage of 'physical' properties for the identification and isolation of the bodies with which he works. In general, it may be said that the more permanent changes which substances undergo are chemical and the more temporary ones physical. Thus, if a piece of ice is heated it becomes liquid water, if this be cooled sufficiently ice is re-formed. Contrast these changes with those of a piece of bread. Heating causes it to become brown or black, but no amount of cooling will reconvert the toast into bread—the latter has undergone a chemical change. Chemical phenomena are generally closely connected with a change in the composition of substances, thus a body A may unite with another B to form a third AB, or AB may decompose into A and B. As a rule substances differ from each other in composition, *i.e.*, they contain different ELEMENTS (q.v.) or varied proportions of the same element. Thus water consists of oxygen and hydrogen, iron rust of oxygen and iron, but hydrogen peroxide, like water, also consists of oxygen and hydrogen, the former, however, contains 16 parts of oxygen to 1 part of hydrogen by weight, while in water these elements are in the ratio 8:1. Again, the black scale formed when iron is strongly heated in air is composed of iron and oxygen in the proportion 168:64, but iron rust, produced under certain conditions, consists of 112 parts of iron and 48 parts of oxygen, by weight. A good many compounds are known, however, which contain identical quantities of the same elements in the same proportions and yet are different substances. It is impossible to explain this in detail here, but a correct idea of the general conditions which prevail in such cases may be gained from the following example: Let the figures 1,2,3 represent each a definite quantity of a different element; the figures may be arranged in the following ways: 123, 213, 312, 132, 321, each arrangement represents a different and entirely definite number, yet the figures are the same throughout, the differences are due simply to their varying *relative* position. So then with the compounds under consideration, their differences are believed to be due to the different relative arrangement of definite quantities of the elementary substances of which they are composed. C. evidently embraces an enormous range of facts, because it covers changes in the composition of all substances. It is, there-

fore, necessary to divide it into separate branches which are concerned particularly with the study of a limited field. These divisions are, of course, made for convenience only and are often arbitrary; moreover, theyf requently overlap considerably. The principal branches of C. recognized at present are as follows: *Physical C.*, which considers phenomena bordering on physics and C.; *Mineralogical C.*, which takes cognizance of the composition of minerals; *Physiological C.*, which includes the changes which food undergoes in its transit through the animal economy, and the transformations that take place in substances of organized beings generally; *Agricultural C.*, which relates to the composition of soils and manures, the ingredients in plants, and the best modes of supplying the food that they require, etc. *Inorganic C.* takes cognizance of the metals and compounds which are not derived from carbon, while *Organic C.* is best defined as treating of the carbon compounds, *Analytical C.* (q.v.) dealing with the composition of substances, and *General C.* which concerns itself with the properties and behavior of large groups of substances. It borders closely on Physical C. *Assaying* (q.v.) is a branch of Analytical C. The division may, however, be made on entirely different lines: thus we have *Pure C* and *Applied or Technological C.* The former deals with chemical phenomena for their own sake, or rather for the discovery of the truth concerning them, whereas the latter is concerned with their utilization for industrial purposes and for the financial profit which they may yield. Here again, however, the line cannot be sharply drawn. Researches with a strictly utilitarian object often fail and sometimes yield results of theoretical interest, while, conversely, investigation, apparently of the most abstruse kind, frequently proves to be of the first importance for chemical industries. *Pharmaceutical C.* takes cognizance of substances used in medicine.

*History.*—The Egyptians, of all nations of antiquity, appear to have had the greatest amount of chemical knowledge. They preserved dead bodies from decay (see MUMMY), fixed colors in silk by means of mordants, prepared many medicines and pigments, as also soap, beer, vinegar, metals and metallic alloys, common salt, vitriol, soda, sal-ammoniac, glass, enamel, tiles, and painted earthen-ware. The Chinese were very early acquainted with the processes for dyeing, and the preparation of metallic alloys, the fabrication of nitre, sulphur, gunpowder, borax, alum, porcelain, verdigris, paper, etc. From the Egyptians, the Greeks and Romans derived what chemical knowledge they possessed; but they added little or nothing, and at the migration of the northern tribes, and overthrow of the Roman empire, a stop was put for a time to the advancement of all science in Europe. The prosecution of chemical knowledge was taken up by the Arabs before the 8th c., and was carried on by them and by their European scholars, the alchemists: see ALCHEMY. The first germs of a real science of C. appear about the end of the

17th and beginning of the 18th c., in the speculations of Becher (q.v.) and the phlogistic theory of Stahl (q.v.). After this, C. rapidly advanced In 1718, Geoffrey brought out the first table of *Affinities;* in 1732, Boerhaave published many original experiments on the chemical relations of heat and light; in 1724 Hales, and in 1756 Black, published researches on the air and aëriform bodies, showing that the carbonic acid evolved during fermentation, respiration, and by the action of acids on chalk, was different from atmospheric air. In 1754-59, Margraff added to the then known earths—lime and silica—two others, alumina and magnesia; he also extracted sugar from plants. In 1770, Priestly began to announce his discoveries of oxygen, ammonia, hydrochloric acid, sulphur dioxide, etc. In 1773-86, Scheele contributed chlorine, hydrofluoric, prussic, tartaric, and gallic acids; also baryta, phosphoric acid from bones, etc., and gave the first hints regarding a new doctrine of combustion. About the same time Bergman and Cavendish enlarged the knowledge of the gases. Lavoisier, between 1770 and '94, reorganized much of the then known C., and founded a system of C. which still remains as the framework of the science. Berthollet, 1787, contributed greatly to the doctrine of affinity, and made researches on chlorine, etc. Fourcroy and Vauquelin advanced organic C.; Klaproth gave many contributions to mineral C. Richter devoted himself to the doctrine of combining proportion, afterwards perfected by Dalton: see Atomic Theory. The discovery of galvanic electricity by Galvani, and its advancement by Volta, led Sir Humphry Davy, and others, to important researches on the metals and gases. Gay Lussac and Thenard advanced the knowledge of organic substances and the chemical relations of heat. Berzelius made laborious researches in mineral C. and analysis and gave an exactness to this department which had never previously been approached. He was also the author of the electro-chemical theory, which was added to by the labors of Faraday, De la Rive, Becquerel, etc., and which may be regarded as the progenitor of the modern ionic hypothesis. Following this, Organic Chemistry rapidly advanced under the researches of Liebig, Wohler, Mitscherlich, Laurent, Kekulé, Baeyer, E. Fischer, and others. See Atom: Atomic Theory: Atomic Weights: Affinity.

Chemical Nomenclature.—In early times, chemical substances were named according to the fanciful theories of alchemy (q.v.). Thus the name *flowers of sulphur* was applied to the sublimed sulphur, which grew or sprang like a flower from sulphur when heated; *spirit of salt*, to hydrochloric acid, the corrosive acid or spirit obtained from common salt; many of these names are in common use at the present day. In 1787, Lavoisier founded a system of nomenclature still followed by chemists. At first, it was intended that the names of simple as well as compound substances should be regulated by system. Hence such terms as oxygen (from *oxus*, acid, and *gennao*, to produce) *the acid-producer*, given from the notion, then held,

that no acid was without oxygen; and hydrogen [from *hydor*, water, and *gennao*], *the water-producer*, from the supposition that hydrogen had more to do with the formation of water than any other element. The advance of chemistry, however, has so completely changed the opinion of chemists regarding the simpler bodies, that such names are now found to mislead; and thereafter, though such as had been given on this system were retained, their meaning has been discarded; one rule only applies, viz., that the scientific names of the metals must end in *um*. In the non-metallic elements, a close analogy exists between chlorine, bromine, iodine, and fluorine. To indicate this, the common termination *ine* has been given, and for a similar reason, carbon, silicon, and boron, end in *on*. The ancient and more common metals retain their popular titles, such as gold, silver, and copper; but they have had Latin names given which end in *um*. The *symbol* of an element is obtained from the abbreviation or first letter of its Latin name, as O for oxygen; Pb for lead (Lat. *plumbum*). When the names of two or more elements commence with the same letter, a second letter is attached to those discovered later, thus we have S for sulphur, Se for selenium, and Si for silicon. For a complete table of the symbols of the elementary substances, see ATOMIC WEIGHTS.

The chemical name of a compound substance indicates the elements of which it is composed. Thus the name ferric oxide (iron rust) indicates that the red powder is made up of oxygen and iron; the name lead sulphide (galena) that it is composed of sulphur and lead. In both these cases the adjective is derived from the Latin name of the metal. This is often done; no absolute rule can be stated. In all similar combinations—

| | | |
|---|---|---|
| Oxygen | forms | Oxides. |
| Chlorine | " | Chlorides. |
| Bromine | " | Bromides. |
| Iodine | " | Iodides. |
| Fluorine | " | Fluorides. |
| Nitrogen | " | Nitrides. |
| Carbon | " | Carbides. |
| Sulphur | " | Sulphides. |
| Selenium | " | Selenides. |
| Phosphorus | " | Phosphides. |

When two elements combine with each other in more than one proportion or equivalent (see ATOMIC THEORY: ATOMIC WEIGHTS), the names of the compound bodies are contrived to express this. Where oxygen or some similar element combines with a metal to form two compounds the termination *us* or *ous* is added to the name of the metal in the case of the substance with the smaller quantity of oxygen, whereas the name of the body with the larger proportion of oxygen ends in *ic*. For example, iron forms with oxygen two compounds containing to 56 of iron: 16 and 24 parts of oxygen, respectively, the former is, therefore, termed ferro*us* oxide and the latter ferr*ic* oxide. Salts derived from these oxides have similar names,

the first of the above substances yields ferr*ous* sulphate (*green vitriol*), $FeSO_4$, etc., and the latter ferr*ic* sulphate, $Fe_2(SO_4)_3$ and ferr*ic* chloride, $FeCl_3$, etc. Thus, if properly applied, a name ending in *ic* implies the existence of another compound with one terminating in *us* and *vice versa*. The names of acids terminate in a similar manner, so that we have sulphur*ic* acid, $H_2SO_4$, and sulphur*ous* acid, $H_2SO_3$, nitr*ic* acid, $HNO_3$, and nitr*ous* acid, $HNO_2$, etc. Where more than two such compounds are known the prefixes *hypo* (under) and *per* (above) are used, as is illustrated by the following examples: *Hypo*chlor*ous* acid, HClO, chlor*ous* acid, $HClO_2$, chlor*ic* acid, $HClO_3$, *per*chlor*ic* acid, $HClO_4$. Acids, the names of which end is *us*, give rise to salts that have names ending in *ite*, whereas if the acid name ends in *ic* the salt name ends in *ate*. Thus the name of salts of the above four oxyacids of chlorine are, *hypo*chlor*ites*, chlor*ites*, chlor*ates*, and *per*chlor*ates*, respectively. In some cases the prefix *per* is used to designate certain highly oxygenated compounds and sometimes the numerical prefixes *mono*, *di*, *tri*, *tetra*, etc. (one, two, three, four, etc.), are employed. The following example will serve to illustrate these points: Nitrogen forms the oxygen derivatives $N_2O$ (nitr*ous* oxide or nitrogen *mon*oxide), NO (Nitr*ic* oxide or nitrogen *di*oxide), $N_2O_3$, (nitr*ous* anhydride or nitrogen *tri*oxide), $NO_2$ (nitrogen peroxide), $N_2O_4$ (nitrogen *tet*roxide), $N_2O_5$ (nitr*ic* anhydride or nitrogen *pent*oxide). The term *anhydride* is applied to a substance which can combine with water to form an acid; the above anhydrides, with water, yield nitr*ous* and nitr*ic* acids, respectively. Chemists are seldom quite consistent in their use of names, but this outline should be sufficient to overcome all ordinary difficulties. It may be pointed out that every chemical name has a definite meaning and, when it is correctly applied, it conveys a great deal of information to one who has once mastered the system, whereas ordinary popular names have no *general* meaning, indeed they frequently imply something contrary to the truth; each one has to be mastered individually and then the unfortunate reader has to learn about the compound. Thus 'oil of vitriol' (sulphuric acid) is not an oil and has nothing to do with glass, 'copperus' (ferrous sulphate) has no connection with copper, and 'nonsol' might be anything from a cigar to a typewriter. The names of organic compounds are more complex, in part they will be treated later.

*Symbols and formulæ.*—The symbol of every element indicates not only that element, but also a certain definite proportion of it by weight. These weights are the *atomic* or *combining weights* (q. v.). Thus H means one part by weight of hydrogen, O, 16 parts by weight of oxygen, etc. (see table of atomic weights). To write '2 lbs. of O' when we mean 2 lbs. of oxygen is, therefore, quite incorrect, because written out fully it means '2 lbs. of 16 parts by weight of oxygen' which is, of course, absurd. When we know the composition of a compound we can write its

*formula*, thus water consists of 2 parts of hydrogen combined with 16 parts of oxygen, its formula is, therefore, $H_2O$. Hydrogen peroxide contains 2 parts of hydrogen with 32 parts of oxygen and it has the formula $H_2O_2$. The numerals indicate that the atomic weight is to be taken that number of times. $H_2O$, then, means 18 parts by weight of water; if we wish to indicate 36 parts of water we write $2H_2O$. Everything between the large numeral and a period or plus sign is to be multiplied by that numeral. The following examples will make this clear, the parts by weight represented by the symbols should be sought out in the table of atomic weights: $NaHCO_3$ (baking soda) sodium hydrogen carbonate; $Na_2CO_3$ (soda ash) sodium carbonate; $Na_2CO_3+10H_2O$ (washing soda) sodium carbonate crystals; $KAl(SO_4)_2.12H_2O$ (potash alum) potassium aluminium sulphate; $Pb_3O_4$ (red lead) triplumbic tetroxide. In general, the symbols of the metals are written first and the oxygen last. It should be noted that we refer to the *symbol* of an *element* and to the *formula* of a *compound.*

Arbitrary symbols are occasionally used to represent a few complex substances, but their employment is restricted, it is not in accord with the best usage and is of very doubtful advantage. Cyanogen is known as Cy; the organic acids are recognized by their initial letters with the sign (—) drawn above, as $\overline{T}$ for tartaric acid, $C_4H_6O_6$; $\overline{A}$ for acetic acid, $C_2H_4O_2$; and $\overline{O}$ for oxalic acid, $C_2H_2O_4$.

For metals in general the symbol M or Me is frequently employed, the letter R being often used in organic chemistry in the same general way to express any radicle (q. v.).

*Formulæ.*—The use of symbols has already been explained, see ATOM, ATOMIC THEORY, ATOMIC WEIGHT and similar headings. When the qualitative and quantitative composition of a compound are known, *but not otherwise*, it is possible to represent it by a formula, which is termed an *empirical formula*; thus the substance found in coal tar and known as benzene, is found to be composed of carbon, 92.3 per cent, and hydrogen, 7.7 per cent, this is the same as saying that it contains 12 parts of carbon united with 1 part of hydrogen. On consulting the table of ATOMIC WEIGHTS it is found that these quantities lead to the formula CH. It will be observed that this formula tells us nothing new about the compound; all that can be said in favor of its use, is that it is far more convenient and easy to remember than the above percentage composition, but this, in itself, is no small advantage. It will be observed, further, that compounds with the formulæ CH, $C_2H_2$, $C_3H_3$, $C_4H_4$, $C_5H_5$, $C_6H_6$, all have the carbon and hydrogen in the same ratio and, therefore, that analysis could not possibly distinguish between them. The next step is to determine the *molecular weight* (q. v.); the molecular weights of the above substances would be 13, 26, 39, 52, 65, 78, etc., respectively. This last number is found to represent the relative weight of the molecule of benzene and, consequently, its *rational*, or perferably, its *molecular*

*formula* is $C_6H_6$. This simple formula, therefore, conveys to the chemist a very large amount of information in a brief form and one which can be remembered with tolerable ease. If, now, we study the chemical reactions of a compound we usually find that certain elements appear to be more closely connected with some others than with the remaining ones which are present in the substance. This can be well illustrated in the case of sulphuric acid (oil of vitriol), $H_2SO_4$. The hydrogen can be replaced readily by many metals. When heated it is converted into water, $H_2O$, and a solid substance called sulphur trioxide, $SO_3$. At higher temperatures this passes into oxygen and sulphur dioxide. Phosphorus pentachloride reacts with sulphuric acid giving two compounds having the formulæ $HSO_3Cl$ and $SO_2Cl_2$, respectively. Can we recall these facts and others by means of a formula? Taking the last reactions first, it will be noticed that $HSO_3Cl$ differs from $H_2SO_4$ by the fact that one atom of chlorine, valency 1, has replaced an oxygen and a hydrogen atom total valency 3, and that in the compound $SO_2Cl_2$ (thionyl chloride), this has been done twice. Evidently, the two hydrogen atoms appear to be more closely associated with two of the oxygen atoms in the original acid than with the other two. The *graphic formula*, $\begin{matrix} O= \\ O= \end{matrix}\!\!S\!<\!\!\begin{matrix} O-H \\ O-H \end{matrix}$, takes account of all the above reactions and many others; on comparing it with that of the above chlorine compound, $\begin{matrix} O= \\ O= \end{matrix}\!\!S\!<\!\!\begin{matrix} Cl \\ Cl \end{matrix}$, it it shows that we regard the chlorine valency 1 as really taking the place of the *radicle* (q. v.) hydroxyl —O—H, which also has a valency of 1. The graphic formulæ for the other compounds mentioned above are given for the sake of comparison: $\begin{matrix} O= \\ O= \end{matrix}\!\!S\!=\!O$ (sulphur trioxide); $\begin{matrix} O= \\ O= \end{matrix}\!\!S$ (sulphur dioxide); $\begin{matrix} O= \\ O= \end{matrix}\!\!S\!\!\begin{matrix} -O-H \\ -Cl \end{matrix}$ (chlorsulphonic acid). Often graphic formulæ are more or less compressed, depending on what special feature it is desired to emphasize, thus sulphuric acid is frequently written $O_2S\!<\!\!\begin{matrix} OH \\ OH \end{matrix}$ or $O_2S(OH)_2$.

*Chemical Equations.*—Every chemical reaction can be represented by an equation, *provided we know the nature and weight both of the substances undergoing the change and also of those produced by the change.* Thus, if we find by experiment that 12 parts of carbon (charcoal) combine with 32 parts of oxygen to form 44 parts of carbon dioxide, we can represent it by the equation: $C+O_2=CO_2$. (see table of Atomic Weights). In the absence of the above information, however, no equation can be given. In other words, a chemical equation is a brief method of representing a very large amount of knowledge *acquired strictly by experiment.* The formation of quick lime, CaO, from chalk, $CaCO_3$, is another example: $CaCO_3=CaO+CO_2$. It will be noticed that the only thing which a chemical has

in common with a mathematical equation is that the *total quantity of matter concerned in the change is constant* (Law of Conservation of Mass). Obviously, no amount of chalk is equal to any quantity of quick lime, any more than hay is equal to beefsteak, although, under certain conditions, the change of the one into the other may take place. To avoid this verbal difficulty some chemists use an arrow, ⟿, instead of the equality sign.

*Mendelejeff's Law.*—The relations of the atoms to each other have received important development in the recent history of the science. Systematic relation of the atomic weights had long been noticed, and various schemes of arrangement were proposed. That due to the late Prof. Mendelejeff, of Russia, has been generally adopted, and is given here in tabular form. (See next page.) It will be found that it brings forward a very striking relationship between the elements.

The elements contained in the table are arranged in groups and series. The groups contain elements of similar properties: the series are determined by the numerical relations. The coincidences of series, position, and grouping is very impressive: and strongly suggests the idea that the atomic weights are functions of the properties, or *vice versa*. Thus the first group contains the allied metals of the alkalis. These all are monads. (See VALENCY.) Next come the dyad group containing the closely related metals of the alkaline earths. In the other groups similar occurrences will be noticed, as in the fourth group—carbon silicon, and titanium, all closely related chemically; in the fifth group nitrogen, phosphorus, antimony, and arsenic, and in the seventh group the halides. Passing from left to right the capacity of combining with oxygen increases, the possible combining ratios determining the length of each series. Passing, on the other hand, from right to left, the same is to be said of the hydrogen combinations, except that the ratio of 1:4 cannot be exceeded, and is held by carbon in the fourth group.

The first group contains the strongest bases, the seventh group the strongest acid-forming elements, while the intermediate groups have intermediate properties. Thus the combining weight of an element fixes its position in the table; and its position being known, its general properties follow.

Another curious thing noticeable in the table is the occurrence of little groups of similar metals at the ends of the series. They do not occur elsewhere, and therefore do not mar the regularity of the order.

Blanks will be observed. Each of these represents a hiatus and indicates the probability of the existence of an undiscovered element. When Mendelejeff originally published his law he prophesied the properties of germanium, scandium and gallium, and indicated their position in the table. When they were subsequently discovered it was found that his forecast was verified in the closest possible manner. It will be observed that the

MENDELEJEFF'S TABLE.

| Series | Group 0. $R^0$ | Group I. $R^{I}Cl$ I $R_2O$ | Group II. $R^{II}Cl_2$ II RO | Group III. $R^{III}Cl_3$ III $R_2O_3$ | Group IV. $R^{IIII}H_4$ IV $RO_2$ | Group V. $R^{III}H_3$ V $R_2O_5$ | Group VI. $R^{II}H_2$ VI $RO_3$ | Group VII. $R^{I}H$ VII $R_2O_7$ | Group VIII. VIII $RO_4$ |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | H=1 | — | — | — | — | — | — | — |
| 2 | He=4 | Li=7 | Gl=9 | B=11 | C=12 | N=14 | O=16 | F=19 | — |
| 3 | Ne=20 | Na=23 | Mg=24.4 | Al=27 | Si=28.4 | P=31 | S=32 | Cl=35.5 | Fe=56 Co=59 Ni=58.7 |
| 4 | A=39.9 | K=39.1 | Ca=40 | Sc=44 | Ti=48 | V=51 | Cr=52 | Mn=55 | |
| 5 | — | Cu=63.6 | Zn=65.4 | Ga=70 | Ge=72.5 | As=75 | Se=79.2 | Br=80 | Ru=101.7 Rh=103 Pd=106.5 |
| 6 | Kr=87.8 | Rb=85.4 | Sr=87.5 | Y=89 | Zr=90.6 | Nb=94 | Mo=96 | —=100 | |
| 7 | — | Ag=108 | Cd=112.4 | In=115 | Sn=119 | Sb=120 | Te=125.6 | I=127 | Os=191 Ir=193 Pt=195 |
| 8 | X=128 | Cs=133 | Ba=137.4 | La=138.5 | Ce 140=17 | Ga=183 | W=184 | — | |
| 9 | | Au=197 | Hg=200 | Tl=204 | Pb=207 | Bi=208.5 | — | — | |
| 10 | | — | Rd=225.2 | — | Th=232.5 | — | U=238.5 | — | |

new elements found in the atmosphere and headed by helium form a zero group, situated between the eighth and the first. These substances exhibit absolutely no power of combination. They may be regarded as bodies in which the strongly negative (acid-forming) properties characteristic of the seventh group, are exactly neutralized by the strongly positive (base-forming) properties associated with the first group. In a few cases the position of an element is *not* that required by its atomic weight. Although, if it were placed in any other position, its properties would not harmonize with those of its neighbors. This is true of cobalt and nickel and of tellurium and iodine. The reason of this discrepancy is not understood. In the table, the dashes above the R represent the highest valencies for chlorine, or hydrogen and for oxygen, respectively, of the elements in each group. Thus in Group IV, for example, the valency is 2 for hydrogen and 6 for oxygen.

*Metals.*—Largely from their physical characteristics a number of the elements are called metals. They all possess metallic lustre, are of opposite affinity to oxygen, can, within certain limits for each case, replace hydrogen in acids and other metals in salts. They conduct electricity and heat comparatively well, and are generally solid at ordinary temperatures.

*Non-Metals.*—The non-metallic elements were formerly called metalloids. Some are solid, such as sulphur and iodine; bromine is liquid, and many are gaseous at ordinary temperatures, such as oxygen and chlorine. Some elements are on the border line, such as silicon and arsenic, it being impossible to class them as metals or non-metals, indeed this classification has lost much of its scientific meaning, but it is retained because of its considerable convenience.

*Radicals.*—A radical is defined as a group of elements which persists unchanged throughout a series of compounds. In thus retaining its individuality it resembles an element, it has a definite VALENCY (q. v.) and certain characteristic properties which are recognizable in its compounds. It can, however, be easily decomposed by proper means, and, in a certain sense, is a strictly hypothetical conception. An example will illustrate this. Ammonium chloride, sulphate, and nitrate have the formulæ $NH_4Cl$, $N_2H_8O_4S$, and $N_2H_4O_3$, respectively. In many ways they resemble each other and they also closely resemble, in their reactions, the corresponding compounds of potassium KCl, $K_2SO_4$, $KNO_3$, and of sodium NaCl, $Na_2SO_4$ and $NaNO_3$, respectively. Yet these resemblances and analogies are not apparent from the above formulæ of the ammonium salts; when, however, we write them $NH_4$-Cl, $(NH_4)_2SO_4$ and $NH_4NO_3$, respectively, we bring into prominence both sets of relationships, first that they resemble other chlorides, sulphates and nitrates, and second that they possess, in common, the complex $NH_4$ which plays in them the same part as is taken by 1 atom of sodium or 1 atom of potassium in the salts of these

metals. This complex, $NH_4$, is termed the *ammonium radical.* It has never been isolated and is, therefore, hypothetical. In a similar manner the radicals $SO_4$ and $NO_3$ are also hypothetical. The former is bivalent, the latter univalent. Another common radical is hydroxyl OH, which is also univalent. Although, in many reactions, the ammonium radical remains intact, yet all ammonium compounds yield ammonia, $NH_3$, quite readily, and ammonia itself can easily be resolved into nitrogen and hydrogen. It is important to keep these facts in mind.

INORGANIC CHEMISTRY.—The name of this branch of the science was originally derived from the fact that it treats of those elements and compounds that form the inorganic mineral portion of the world. Its signification has been broadened, and now it is defined by the character of compounds and elements irrespective of their origin. It merges into organic chemistry, so that an exact line of demarcation cannot well be drawn. Thus the carbonates of the metals, carbon dioxide and a few other relatively simple compounds which, strictly speaking, are organic, for convenience, are included in the inorganic section. The chief classes of compounds embraced in inorganic chemistry are the following: *Oxides.*—These are subdivided into (1) *basic oxides,* such as calcium oxide, CaO (quick lime). They combine with acids and form SALTS (q. v.) and water. Closely connected with these are the *hydroxides,* compounds containing the hydroxyl, -OH, group. The hydroxides of the metals are, in general, basic, those of the non-metals are acids. Hypochlorous acid, HOCl (contained in bleaching liquor), is an example of the latter. Calcium hydroxide, $Ca(OH)_2$ (slacked lime), sodium hydroxide, NaOH (caustic soda, soda ley) and potassium hydroxide, KOH (caustic potash, potash ley), are instances of the former. Towards acids they act like the basic oxides. (2) *Peroxides.*—These contain a larger proportion of oxygen than the basic oxides and a part of it is given off when the peroxide is heated. With acids they give the same salts as the basic oxides, together with oxygen or hydrogen peroxide. Examples: Barium peroxide, $BaO_2$, manganese dioxide, $MnO_2$, red lead, $Pb_3O_4$) *Anhydrides.*—These generally contain more oxygen than the peroxides and combine with water to form acids. Examples: sulphuric anhydride (sulphur trioxide) $SO_3$, nitric anhydride (nitrogen pentoxide) and manganic anhydride, $Mn_2O_7$, which give sulphuric acid, $H_2SO_4$, nitric acid, $HNO_3$ and permanganic acid, $HMnO_4$, respectively. Some oxides can act *both* as basic oxides and anhydrides. Thus aluminum oxide, $Al_2O_3$, is an anhydride and a basic oxide. With acids it forms salts like aluminium chloride, $AlCl_3$, with water it yields aluminum hydroxide, $Al(OH)_3$, which with strong bases, like sodium hydroxide, forms salts such as sodium aluminate, $Al(ONa)_3$. *Acids.*—These are compounds which contain hydrogen that is replacable by an equivalent quantity of a metal or basic radical, the resulting compounds being

salts. (See EQUIVALENT WEIGHTS.) They are generally sour and usually turn blue litmus red, but all substances which act in this manner are not acids. Acids are sometimes termed 'hydrogen salts.' The most important acids are hydrochloric, HCl, nitric, $HNO_3$, and sulphuric, $H_2SO_4$. These are often referred to as 'the mineral acids' or the 'strong acids.'

*Salts.*—A salt is a compound formed by the action of a base on an acid, or, otherwise expressed, it is a substance produced by replacing the hydrogen of an acid by a metal or basic radical. There are three classes of salts: (1) *Basic,* which contain hydroxyl, OH *i. e.* the basic oxide is incompletely neutralized by the acid. Example: basic bismuth chloride, $BiCl_2OH$. (2) *Normal,* sometimes termed 'neutral.' In these the base and acid are exactly mutually neutralized. Examples: Bismuth chloride, $BiCl_3$, potassium nitrate, (saltpetre) $KNO_3$. (3) *Acid* salts, salts in which all of the hydrogen of the acid has not been replaced by metal. Example: sodium acid carbonate (baking soda) $NaHCO_3$. Sometimes the term 'hydrogen' is used instead of acid in the names of these substances, so that baking soda is also called sodium hydrogen carbonate, and this is the preferable term.

Of the remaining compounds it is impossible to write at any length. The *sulphides,* in general, resemble the oxides. The *carbides, borides, silicides, nitrides, phosphides* are known in considerable number. They are generally formed in the electric furnace from a metal and the respective element, and are decomposed by water. Most carbides yield acetylene and an oxide of the metal in these circumstances, and the other compounds act in a similar manner. They are often referred to collectively as 'binary compounds', because they are composed of 2 elements. Details concerning them can be obtained from the latest textbooks of chemistry.

ORGANIC CHEMISTRY, formerly the chemistry of plants and animals, is now defined as the C. of *the hydrocarbons and their derivatives.* For convenience it is regarded as a distinct branch of C. because of the enormous number of facts with which it deals. The number of elements with which carbon unites is greater than the number which can be induced to combine with any other individual element. Carbon is also unique in its apparently unlimited power of combining with itself, thus producing stable compounds containing many atoms of carbon. The simplest compound of carbon is methane (marsh gas), $CH_4$, and from it all other organic compounds can be regarded as being derived by substituting one or more of the hydrogen atoms by other elements or radicles. Organic compounds are divided into 3 great groups, the compounds in each of which have certain properties in common; they are termed *aliphatic, alicyclic,* and *aromatic,* respectively. *Aliphatic compounds.*—These are compounds with an *open chain structure* like the following·

Methane $\begin{matrix} H \\ HCH, \\ H \end{matrix}$ ethane $\begin{matrix} H\ H \\ HC—CH, \\ H\ H \end{matrix}$ propane $\begin{matrix} H\ H\ H \\ HC—C—CH, \\ H\ H\ H \end{matrix}$

etc. They are subdivided into (1) the *paraffin* or *methane* series, of which the above are examples; their names end in *ane*; they are saturated and can be represented by the general formulæ $CnH_{2n}+_2$, *i. e.* they contain twice as many atoms of hydrogen plus 2 as they do of carbon. (2) *Ethylene series*, sometimes termed olefin series. Example:

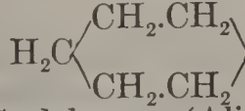
*ethylene* $\begin{matrix} H\ H \\ C=C, \\ H\ H \end{matrix}$ *propylene* $\begin{matrix} H\ H\ H \\ C=C—CH, \\ H\ \ H \end{matrix}$

These are 'unsaturated,' *i.e.*, they readily add certain reagents, such as bromine, and are represented by the general formula $C_nH_{2n}$. Petroleum is chiefly composed of methane and ethylene derivatives. (3) *Acetylene series*, named from acetylene, $HC\equiv CH$, allylene, $C_3H_4$, etc. These are represented by the formula $C_nH_{2n}—_2$, and they are more unsaturated than the ethylene series. It will be noticed that any compound in each of the above series differs in composition from those immediately before and after it in the same series by the constant quantity $CH_2$. Such a series of compounds, differing in this way, is said to be *homologous*. Homologous series are found in the majority of the various classes of carbon compounds.

*Alicyclic Compounds.*—These are sometimes termed *polymethylene* derivatives. They are represented by the general formula $C_nH_{2n}$, and thus have the same empirical formulæ as the ethylenes. In general, their properties resemble those of the aliphatic substances, but they differ from the ethylenes in their inability to add readily 2 atoms of bromine or hydrogen or 1 molecule of hydrobromic acid, etc., *i.e.*, they act essentially as *saturated* compounds. For this reason they are best designated by adding the prefix *cyclo* to the names applied to the methane derivatives containing the same number of carbon atoms, see below. The two units of valency, which, in the ethylenes, are supposed to constitute the double linkage, are, in the alicyclic compounds, assumed to be used in closing the ring; this ring structure is assigned to them because of their stability. A comparison of the formula of the following compounds will make these points clearer:

$CH_3CH_2CH_2CH_2CH_2CH_3$; *Hexane* (Methane series)

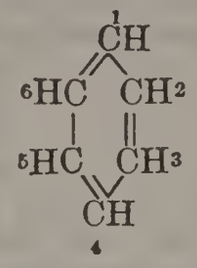
$CH_2:CHCH_2CH_2CH_2CH_3$ *Hexylene* (Ethylene series)



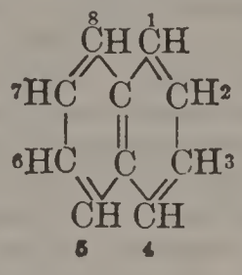
*Cyclohexane* (Alicyclic)

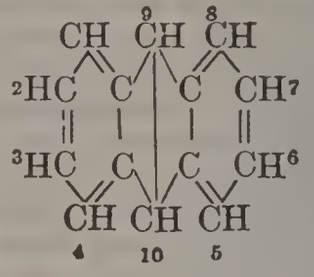
To this class of compounds belong the terpins, camphor, many constituents of essential oils and a large proportion of the materials composing Caucasian petroleum. *Aromatic Compounds.*—The name was originally given because of the odor of the substances belonging to this group which were first discovered. Compounds comprised in this class

show the following general characteristics, in contrast to those exhibited by the other classes of organic bodies. The ratio of carbon to hydrogen is greater; they readily form *substitution products*, but only *add* reagents with difficulty, these additive products are alicyclic derivatives. All aromatic compounds are regarded as being derived from benzene, $C_6H_6$, which, on the whole, is best represented

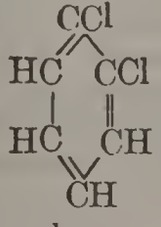
by the formula:  Two or more benzene

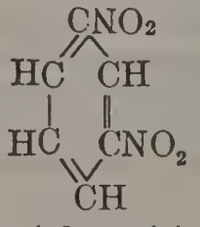
molecules may combine to give more complex derivatives such as napthalene, or anthracene.

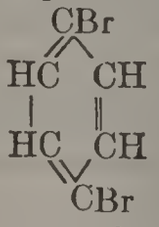




The chief source of the aromatic compounds is the tar formed by heating coal, as in the manufacture of coke or illuminating gas, where this latter is not made from petroleum. All the artificial dyes and many of the most important synthetical medicines, besides thousands of other substances, belong to the aromatic series. The carbon atoms are numbered in order to designate briefly the position of substituting groups; thus the following compounds of benzene are termed 1,2, dichlorbenzene; 1,3, dinitrobenzene; and 1,4, dibrombenzene, respectively. Fre-







quently, however, the 1,2 position is termed the *ortho*, 1,3, the *meta*, and 1,4, the *para* position; for brevity these are often written *o-*, *m-*, *p-*. In the case of naphthalene, position 1 is often referred to as $\alpha$- and position 2 as $\beta$-. Of course the selection of the particular carbon atom which is taken as being 1 is purely arbitrary, the essential point is the *relative* position of the groups or atoms in question, thus, in benzene, the positions 2,3; 3,4; 4,5; 5,6; and 6,1 are all found to be identical with 1,2 and so, correspondingly, in the case of the meta and para derivatives

So far we have only considered the hydrocarbons, *i. e.* carbon and hydrogen derivatives. The remaining classes of compounds must be dealt with more briefly. *Alcohols.*—These contain the hydroxyl group, —OH, one or more times in place of a corresponding number of hydrogen atoms. Ordinary ethyl alcohol, $CH_3CH_2OH$, is a primary, monobasic alcohol; glycerol (glycerin) $HOCH_2CH(OH)—CH_2OH$ is a tribasic alcohol. The sugars generally contain 4 or more hydroxyl groups. Alcohols are termed *primary, secondary,* and *tertiary,* according to whether they contain the group $—CH_2OH$, $>CHOH$, or $—\overset{|}{\underset{|}{C}}OH$, respectively, the carbon atom being linked to 1, 2 or 3 other carbon atoms, as, for example,

$CH_3CH_2CH_2CH_2OH$, $CH_3CH_2CH(OH)CH_3$,
*Primary butyl alcohol* *Secondary butyl alcohol*

$$\begin{matrix} CH_3 \\ CH_3 \\ CH_3 \end{matrix}\Big\rangle COH$$

*Tertiary butyl alcohol.*

*Aldehydes.*—These may be best regarded as being derived from primary alcohols by further oxidation and elimination of water, thus ethyl alcohol, $CH_3CH_2OH$ gives the hypothetical, intermediate compound, $CH_3CH\langle\begin{matrix}O\,H\\OH\\H\end{matrix}$ which passes into acetaldehyde (acetic aldehyde) $CH_3CO$ when water is eliminated in the manner shown by the dotted line. *Ketones.*—These are derived from secondary alcohols in the same manner as aldehydes from primary ones, thus,

$CH_3CH(OH)CH_3$, $\rightarrow CH_3C(OH)_2CH_3 \rightarrow$
*Secondary propyl alcohol* *Hypothetical*

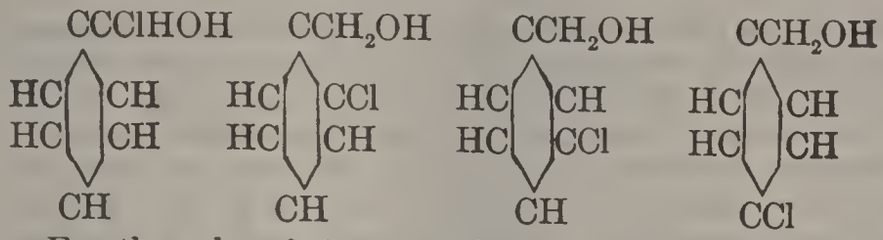
$(CH_3)_2CO$.
*Acetone* (*Dimethyl Ketone*)

Both aldehydes and ketones contain the carbonyl group, $>CO$. *Acids.*—Compounds containing the *carboxyl group* $—C\begin{matrix}=O\\—OH,\end{matrix}$ as acetic acid $CH_3COOH$. They are derived from aldehydes by further oxidation. The acids give rise to *acid chlorides,* as acetyl chloride, $CH_3C\begin{matrix}=O\\—Cl\end{matrix}$; to anhydrides like acetic anhydride, $\begin{matrix}CH_3CO\\CH_3CO\end{matrix}\Big\rangle O$, and to *esters,* sometimes called, incorrectly, ethereal salts, such as ethyl acetate, $CH_3C\begin{matrix}=O\\—OC_2H_5.\end{matrix}$ *Ethers* bear the same relation to alcohols that oxides do to hydroxides, as a comparison of dicthyl ether (ether) $\begin{matrix}CH_3CH_2\\CH_3CH_2\end{matrix}\Big\rangle O$ with alcohol will make plain.

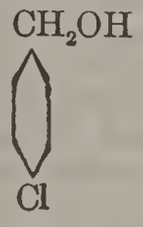
*Amines* may be regarded as ammonia with one or more atoms of hydrogen substituted by hydrocarbon radicles,

thus ethylamin, $H_2NC_2H_5$, trimethylamine, $(CH_3)_3N$. The former is a *primary*, the latter a *tertiary* amine. If the hydrogen in ammonia be substituted by an acid radicle (acyl group) *amides* are formed, thus, $CH_3CONH_2$, acetamide. *Nitriles* contain the group —CN; *nitro compounds* the group $—NO_2$ and *sulphonic acids* the complex, $—SO_2OH$, while *chlorine, bromine, iodine*, etc., derivatives are formed by substituting one or more atoms of hydrogen in the hydrocarbons for equivalent quantities of these elements. It will, of course, be understood that any of these groups may occur more than once in a compound and that several groups of different characters may be found in the same substance, thus oxalic acid, $\begin{matrix} O & O \\ \| & \| \\ HOC–COH, \end{matrix}$ is a dibasic acid; $ClCH_2COOH$ is chloracetic acid; $CH_3CH(OH)COOH$, lactic acid, is at once a secondary alcohol and also an acid. Moreover, other elements besides hydrogen, oxygen and nitrogen may be present. In general, these resemble in their compounds the derivatives of that one of the above three elements which corresponds to them in valency. Thus if hydrogen is replaced by chlorine, bromine, iodine or a metal, the compounds so produced show certain general resemblances to the original substance; brombenzene, for example, behaves very much like benzene. Sulphur, when it has a valency like that of oxygen, forms compounds corresponding to the alcohols, termed thioalcohols, or usually *mercaptans*, or to the ethers or acids, while the derivatives of phosphorus and arsenic resemble the amines and amides.

The foregoing will give a faint idea of the enormous number of compounds which are known, but only a very small part has been told. For example, benzene can only form one monovalent alcohol, phenol, $\begin{matrix} & COH & \\ & \diagup\!\!\diagdown & \\ HC & & CH \\ \| & & | \\ HC & & CH \\ & \diagdown\!\!\diagup & \\ & CH & \end{matrix}$, but one or more of the hydrogen atoms of benzene can be substituted for a corresponding number of methyl, ethyl, etc., groups, and each of these can then form alcohols, aldehydes, acids, etc. Thus, to take the simplest example, methyl benzene (toluene) $C_6H_5CH_3$ forms benzyl alcohol, $C_6H_5CH_2OH$, benzaldehyde, $C_6H_5CHO$, and benzoic acid, $C_6H_5COOH$, and, of course, one or more of the 5 hydrogen atoms in the benzene ring of any of these substances may be substituted simultaneously, giving chlor, brom, nitro, etc., acids, aldehydes, or alcohols. Finally, account must be taken of the different relative positions in the molecule, of these substituting groups or atoms. A simple case may serve to illustrate this point, 4 monochlorbenzyl alcohols are known, viz.:




For the sake of clearness the double linkages have been omitted, as is frequently done in such formulæ of benzene derivatives, indeed very often the CH combinations are also omitted, a simple hexagon standing for them; in this form the formula for the last of the above compounds, parachlorbenzyl alcohol, would be




CHEMISTS AND DRUGGISTS, Laws relating to: in the United States, municipal or state laws; not general as in Great Britain. Usually some conditions are prescribed for those who are to engage in the compounding and sale of drugs for medicine. A license is generally required, which can be obtained either on examination before some proper board, or on showing a certificate from some school or college of pharmacy. Legislation usually presumes that certificates obtained by examination are evidence of efficient education, but that the freedom of engaging in business ought not to be interfered with; and that the right of the citizen to consult whom he chooses, or to buy drugs from whom he will, must be respected. Serious mistakes, such as the substitution of one medicine for another, to the injury of the purchaser, are punishable by law, both in the unqualified and in the case of those qualified by examination or diploma.

In Great Britain, in 1868, it was deemed necessary, owing to the frequent evils arising from the facility of obtaining poisons, to enact that no person should sell, or keep open shop for selling poisons, or assume or use the title of chemist or druggist or pharmacist, unless he be registered under the act 31 and 32 Vict. c. 121, amended by 32 and 33 Vict. c. 117, and conform to the regulations as to sale of poisons. All persons who in 1868 carried on the business of chemists and druggists, and their apprentices and assistants, were entitled to be registered. The register of chemists and druggists under this act now contains the names of all qualified persons in Great Britain.—For the English distinction between the profession of apothecary, and the kindred one of pharmaceutical chemist, see Apothecary.

CHEMITYPE, *kĕm'ĭ-tīp:* name given by the inventor, C. Pül, a Dane, to a chemical process of engraving in relief on a metal plate, and to the engraving so pro-

duced. On a polished plate of zinc an etching or an engraving is made in the usual way. The depressions of this design are then filled up with a melted metal—the nature of which is not revealed—and this superadded metal is then reduced to the exact level of the zinc, so that the design now appears as if inlaid. An acid is next applied to the surface, which attacks the zinc, without affecting the inlaid metal, and thus there results an exact copy in relief of the original intaglio engraving. In competition with wood-cuts, relief-lithographs, and copperplates, chemitype does not yet evince any great superiority; it fails especially in that character of strength and softness which wood-cuts express so well. The prints produced by this art look more like engravings than like wood-cuts. They have this advantage, however, that they give an exact copy of the original design made by the artist on the metal; whereas in wood-cutting the drawing made on the block may be impaired in its effect by the engraver. Chemitype is adapted particularly for producing maps by the common printing-press. Pül practiced his invention at first on a small scale in Copenhagen, 1843–46, and then extensively in Leipsic. In 1850, he went to Vienna, where he was employed in the imperial printing-establishment.

CHEMNITZ, *chĕm′nĭts*, or *kĕm′nĭts:* town of Saxony, at the base of the Erzgebirge, and at the confluence of the river Chemnitz with three other rivers; lat. 50° 50′ n., long. 17° 55′ e. It is the principal manufacturing town of Saxony—its industry consisting in weaving cottons, woolens, and silks, and in printing calicoes, chiefly for German consumption. Cotton stockings are a most extensive manufacture, and rival the British in quality and cheapness. The American markets are chiefly supplied from this place. It has several extensive machine-factories producing machinery for flax and wool spinning, weaving, and mining industry. Among the numerous educational institutes of Chemnitz are schools of weaving, mining and tailoring. For four centuries Chemnitz was a free imperial city. Traces of its antiquity are seen in many of the buildings, but are fast disappearing. Pop. 206,600.

CHEMNITZ, *chĕm′nĭts*, Martin: 1522, Nov. 9—1586, Apr. 8; b. Treuenbrietzen, Brandenburg: next to Luther and Melanchthon the most distinguished German Protesant theologian of the 16th c. He studied at Frankfurt and Wittenberg; and, 1548, became rector of the cathedral-school of Königsberg. About 1550, he applied himself seriously to theology, and in 1553 went back to Wittenberg, where he delivered prelections on Melanchthon's *Loci communes*, from which sprang his own *Loci theologici*, which, for method and learning, excels all similar books of the same age. In 1554, he was made a preacher in Brunswick, where he wrote his *Repetitio Sanæ Doctrinæ de Vera Presentia Corporis et Sanguinis Domini in Cœna Sacra* (Leip. 1561), in which he defended Luther's view of the

Lord's Supper against that of the Swiss reformers; *Theologiæ Jesuitorum Præcipua Capita* (Leip. 1562); and *Examen Concilii Tridentini* (Leip. 1565), an argument of remarkable acuteness and learning against the dogmas of the Church of Rome. His *Corpus Doctrinæ Prutenicæ*( 1566), written in conjunction with Mörlin, became a standard work of divinity among the Prussian Protestants. But his greatest ecclesiastical achievement was inducing the Saxon and Swabian churches to adopt as their confession of faith the *Concordienformel*, thus extending and consolidating the creed of Luther. He died at Brunswick.

CHEMNITZIA, *kĕm-nĭt'zĭ-a:* genus of gasteropodous mollusca. It has a slender, elongated, many-whorled shell; the whorls striated; a simple semi-oval aperture; and a horny operculum. There are many recent species scattered all over the world. The discriminating characters of the fossil species being taken from the form of the shell, it is more than probable that the remains of very different animals are classed under this generic name. No less than 180 species have been described, occurring throughout all the divisions of the fossiliferous strata from the Lower Silurian upward.

CHEMOSH, *kē'mosh:* national deity of the Moabites and Ammonites. Gesenius derived the name from *kamash*, to subdue, and considered him the god of war; Hackmann throught it meant royal deity. Jerome erroneously identified Chemosh with Baal-Peor; others supposed him the same with Baal-Zebub, or with Saturn. According to tradition he was worshipped under the symbol of a black star; Maimonides says his votaries used no head-covering, and no garments sewn with needles. Children appear to have been sacrificed to him. His name occurs on the Moabite Stone. The worship of Chemosh was introduced among the Jews by Solomon, but stopped by Josiah.

CHEMULPO, *chĕmŭl'pō*, Corea, a town on the western coast, 25 miles by road west-south-west of the capital, Seoul. It is one of the three treaty ports opened in 1883 to foreign commerce, the volume of which has since steadily advanced, in spite of the drawbacks resulting from the great difference between high and low water here (33 feet), and the want of wharves. The imports attain a value of $3,500,000 in some years; the exports, $1,500,000. The chief imports are cotton and woolen goods, railway machinery, metals, oils, and timber; the chief exports are rice, beans, millet, ginseng, and cowhides. The majority of the 3,000 foreigners are Japanese. Small steamers owned by Japanese run to Seoul in summer, and Chemulpo is connected by telegraph both with China and Japan.

CHEMUNG, *shē-mŭng'*, Battle of the, in the Revolution, 1779, Aug. 29; the decisive engagement of Sullivan's campaign to harry the Iroquois country. The Indians and their Tory allies made a stand in force at the Chemung River, about a mile southeast of Newtown (Elmira), N. Y. They had five companies of British troops and rangers,

numbering about 250, and the entire fighting strength of the Six Nations. These Indians the Tory authorities state as 550; but this seems impossibly small, and Sullivan and his officers, from a careful estimate of various factors, place it at 1,200 or 1,300. Sullivan had about 5,000. The Indians were led by their Napoleon, Brant (Thayendanege); the Tories by Col. John Butler, with Sir John Johnson, and perhaps Guy Johnson, Major Walter N. Butler, and Capt. MacDonald. Their line was in advance of the river resting on a bend at the right. From the bend ran a breastwork half a mile long, flanked by bastions and having a dwelling in front turned into a blockhouse; it was concealed by a mass of pines and scrub-oaks, some of them cut from other places and stuck down to make a seemingly thick virgin forest. From their left a thin line was continued about a mile and a half to a steep ridge parallel to the river, where a strong detachment was posted; and a mile further east was another ridge parallel to the first, with a breastwork and another company, the two advance detachments designed to take the Americans in flank and rear. Along the front of the main breastwork ran the road to Newtown, exposing the whole American flank to a raking fire. The entire works formed a magnificent ambuscade; but Sullivan, who was no Braddock, guessed the utility of the ridges, and knew what scouting parties were for. About 11 A.M. of the 29th Major Poor beat up the position; and Gen. Hand formed his infantry in a wood 400 yards from the works and waited for the rest of the army. Sullivan ordered Poor to carry the hill at his right and take the British in rear, while the main body with artillery attacked the front. Steadied by Brant, a warrior of great force and sagacity, the Indians not only made a stubborn resistance for two hours, yielding inch by inch, but even stood up against the bayonet, something almost unknown in Indian history. At first thrown into a panic by the artillery, Brant rallied them to a fresh and tenacious fight; and noting Poor's turning movement, threw a strong detachment with a battalion of rangers to the hill to oppose it. But at length Poor, having cleared the crest, burst on the rear with a bayonet charge; and both Indians and whites fled across the river in rout, the Indians leaving their packs and weapons behind, and eleven dead, though they usually carry all these away with them. Fourteen other dead Indians were in fact found under the leaves, two canoes were found covered with blood, and the Indians told their western villages that they had many killed and vast numbers wounded. The Americans had six killed and 40 or 50 wounded.

CHEMUNG SERIES: in American geology, the great series of shoal-water sediments, mostly light gray shales and ripple-marked sandstones, that were laid down in Upper Devonian time in the great northeastern bay of the interior sea that covered much of what is now the Mississippi valley. This northeastern bay stretched across lower

Michigan, Ontario, and central New York, reaching nearly to the Hudson River. The Chemung Series includes the Catskill Group and is divided into the Chemung and Portage Stages. It is typically developed on the Chemung River in New York. It reaches its maximum thickness of 8,000 feet in eastern Pennsylvania, but thins out and disappears to the south and west. The 'oil sands' of Pennsylvania from which have been taken many millions of barrels of petroleum, are of Chemung age.

The Chemung corresponds to part of the series of shales and limestones laid down in the Northwest Territory and Manitoba, Canada, probably to part of the Devonian strata that extend along the main range of the Rocky Mountains in Canada and to an unknown fraction of the great thickness of Devonian strata in Nevada. In Europe the Old Red Sandstone, a series of sandstones and shales estimated as possibly 10,000 feet thick, is in many respects like the Catskill group of the Chemung, and contains similar fossils. This great sandstone formation is found in South Wales, England, and Scotland, near the Baltic Sea in Russia, in Spitzbergen, and in Greenland.

The characteristic fossils of the Chemung Series in New York and Pennsylvania include, among land plants, tree-fern (*Caulopteris*), and lepidodendrons. The fauna includes among mollusks, brachiopods and lamelli branchs in great number and variety, no less than 252 species of lamellibranchs having been described from New York. Gasteropods are rare. Of vertebrates the Chemung contains remains of *Pterichthys* and other ancestors of the true fishes, including *Cocosteus*. The *Dipnoi*, or lungfishes, a connecting link between fishes and amphibions, are represented by species of large size (*Dinicthys*). Of selachians or sharks, but few remains are found.

CHENAB, or CHENAUB, *chē-nâb′:* largest, according to general opinion, of the five rivers which give name to the Punjab. Like most of the principal streams of India, it rises n. of the Himalayas, making its way through the Ritanka pass, 13,000 ft. above the sea, and having its source about lat. 32° 48′ n., and long. 77° 27′ e. After a descent through 300 m., the C. reaches the level country. At the end of another 300 m. it receives, on its right, the Jhelum, in lat. 31° 12′ n., long. 72° 12′ e.; 50 m. further down, it is joined, on its left, by the Ravee; and 110 m. lower, it absorbs, through the Ghara on its left, the mingled waters of the Beas and the Sutlej. Lastly, at a distance of 60 m., the accumulated floods, under the designation of Punjnud, lose themselves in the Indus, lat. 28° 55′ n., long. 70° 28′ e.—being still 470 m. from the ocean.

CHENANGO RIVER, *she-năng′gō:* in central New York. It rises in Oneida co., flows s. and s.w. through Madison and Chenango cos., and joins the Susquehanna about 10 m. n. of Binghampton, in Broome co. Length 90 m.

CHENDAREE, or CHUNDAREE: see CHANDHAIREE.

CHENERY, *chĕn'ėr-ĭ*, THOMAS, English journalist and Orientalist: b. Barbadoes 1826; d. 1884, Feb. 11. He was educated at Eton and Cambridge. He was called to the bar, but was soon after sent out as *Times* correspondent to Constantinople, where he remained during the Crimean war. Afterward he was constantly employed on the *Times* staff until 1877, when he became its editor, a post which he filled till within 10 days of his death. As a singularly thorough Hebrew and Arabic scholar he had few equals among his contemporaries, and his translation of the Arabic classic, the *Assemblies of Al Hariri* (1867), led to his appointment to a chair of Arabic at Oxford in 1868. He was one of the company of Old Testament revisers, and besides other works published an edition of the *Machberoth Ithiel* (1872), a Hebrew version of the *Assemblies*.

CHENEY, *chē'nĭ*, CHARLES EDWARD, American clergyman: b. Canandaigua, N. Y., 1836, Feb. 12. He was graduated at Hobart College in 1857, and, after a course at the Theological Seminary of Virginia was ordained a clergyman of the Protestant Episcopal Church in 1858. Becoming rector of Christ Church, Chicago, he incurred censure for heterodoxy and was tried on that charge and deposed from the priesthood. He at once became a leader in the Reformed Episcopal movement, and was consecrated bishop of the new denomination in 1873, a post he has since held as well as the rectorship of Christ Church. He has written *Twenty-eight Sermons* (1880); *What Do Reformed Episcopalians Believe?* (1888); *The Enlistment of the Christian Soldier* (1893); *A King of France Unnamed in History* (1902); etc.

CHENEY, EDNAH DOW (LITTLEHALE), American writer: b. Boston 1824; d. 1904. She was married to Seth Wells Cheney (q.v.) in 1853. She was president of the New England Woman's Club and the Massachusetts Suffrage Association. She wrote *Handbook of American History for Colored People* (1866); *Gleanings in the Field of Art* (1881); *Life of Louisa M. Alcott* (1889); and several stories, including *Nora's Return* a sequel to Ibsen's *A Doll's House; Sally Williams, the Mountain Girl* (1872); etc.

CHENEY, JOHN VANCE, American poet, literary critic, and librarian; b. Groveland, N. Y., 1848, Dec. 29. He was a pupil in the public schools of Dorset, Vt., at Burr and Burton Seminary, Manchester, Vt., and at Temple Hill Academy, Geneseo, N. Y., where he graduated, valedictorian, at 17. In lieu of a college course he read law and was admitted to the Essex Bar, at Lawrence, Mass., 1872, Mar. 9. In 1876 ill-health sent him to California. For a time he was a cashier in the San Francisco Post-Office. In 1887 he was made librarian of the San Francisco Free Public Library, which position he held until called to the Newberry Library, Chicago, in

1894. He has published several volumes of verse, and two volumes of essays on poets and poetry, including *The Old Doctor* (1881); *Thistle-Drift*, poems (1887); *Wood Blooms*, poems (1888); *The Golden Guess*, essays (1892); *Ninette, A Redwoods Idyl* (1894); *That Dome in Air*, essays (1895); *Queen Helen, and Other Poems* (1895); *Out of Silence*, poems (1897); *Lyrics* (1902); *Poems* (1905). He is editor of *Wood Notes Wild*, by Simeon Pease Cheney, with appendix and notes (1892); Caxton Club's edition of Derby's *Phœnixiana* (1897); *The Caxton Club Scrap-Book* (1904).

CHENEY, Seth Wells, American engraver: b. South Manchester, Conn., 1810, Nov. 26; d. there 1856, Sept. 10. Upon the death of his father in 1829 he joined his brother John in Boston, where he entered the latter's profession, that of an engraver. A position in the Athenæum enabled him to study and work from casts and drawings, and he copied and engraved in 1832 Washington Allston's picture, *Mother and Child*, which was afterward burned. In 1833 he studied in Paris in the atelier of De la Roche. His great power was in the expression of character in individual heads. He never attempted historical or genre subjects, and only rarely grouped two or more heads together. Engravings by him may be found in the following annuals: *Gift of Friendship* (1848); *Religious Keepsake* (1846); *Religious Offering* (1840); *The Token* (1832, 1836, 1837); *Youth's Keepsake* (1831). See *Memoir of Seth W. Cheney*, by E. D. Cheney (Bost. 1881), and S. R. Koehler's *Catalogue of the Works of John and S. W. Cheney*. He was married to Ednah Dow Littlehale in 1853.

CHENEY, Theseus Apoleon, American historical writer: b. Leon, N. Y., 1830, March 16; d. Starkey, N. Y., 1878, Aug. 2. His publications include *Historical Sketch of the Chemung Valley* (1866) *Historical Sketch of* 18 *Counties of Central and Southern New York* (1868); *Laron; Relations of Government to Science;* and *Antiquarian Researches*.

CHÉNIER, *shā-nyā*, André Marie de, French poet; b. Constantinople, 1762, Oct. 30; d. Paris, 1794, July 20. He went to France when very young, and entered the army, but left six months after to devote himself to literary pursuits. He was for about three years secretary to the French embassy at London, but in 1790 returned to Paris. Advocating the doctrine of a limited monarchy, he made himself equally offensive to the Royalist and the Jacobinical party. In consequence of his attacks on the Jacobins he was condemned by the revolutionary tribunal, and executed. Although but little known in his own day, Chénier has long been regarded as one of the finest French poets of his century, his chief characteristics being purity of form combined with vigor of thought and diction. He wrote idyls, elegies, odes (including one to Charlotte Corday), dithyrambs, philosophic pieces, etc. The maturity, breadth and soundness of his judg-

ment in poetical composition are demonstrated by his poem on *Invention*. Of the same year is his fine idyl, *Liberty*. Similar in spirit to this, and of perfect Pindaric form, is the *Dithyrambic on the Tennis Play* (1791). In his prison of St. Lazare he composed a beautiful elegy, *The Girl Captive*.

CHÉNIER, Marie Joseph de, a French dramatist, younger brother of André M. Chénier (q.v.): b. 1764, Feb. 11; d. 1811, Jan. 10. He was a Jacobin, and member of the Legislative Assembly in the Revolution. His tragedies—*Charles* IX. (1789); *Henry* VIII. and *Calas* (both 1791); *Caius Gracchus* (1793); and others—brought him fame and success by the accordance of their republican and revolutionary sentiments with the public opinion of the time, rather than by their merits as compositions. His national songs were approved by the best test of such productions—popularity: one of them, *The Parting Song* (*Partant pour la Syrie*), is hardly less famous than the *Marseillaise*. His satires are full of spirit, point, and wit, but often rancorous and unjust.

CHENILLE, *shĕ-nēl′*, a round fabric or trimming, made by uniting with two or more sets of warps, either by weaving or twisting, a fine filling or weft, which is allowed to project beyond the warps. This filling is cut at its outer edges, and the fabric is then twisted, assuming a cylindrical shape with weft projecting radically from the central line of warps. The name is applied, also, to lace, carpets, and cloth made wholly or in part from silk threads twisted or woven to resemble the tufted trimming of the same name.

CHENONCEAUX, Castle of: see Bléré.

CHENOPODIACEÆ, *kē-nō-pŏd-ĭ-ā′sē-ē*, or Salsolaceæ, *săl-sō-lā′sē-ē:* natural order of exogenous plants, consisting of herbaceous and half-shrubby plants, with leaves entire or divided, and destitute of stipules. The flowers are inconspicuous, hermaphrodite, or unisexual; the perianth deeply divided, persistent; the stamens inserted into its base, opposite to its segments, and equal to them in number, or fewer; the ovary single, free, or occasionally adhering to the tube of the perianth, with a single ovule attached to the base of the cavity; the style generally with 2–4 divisions. The fruit is membranous, inclosed in the perianth, which sometimes becomes fleshy. The seed has a curved or spiral embryo.—There are about 360 known species, most of which have a weed-like appearance, and grow in waste places. They are widely diffused over the world, but abound particularly in the n. parts of Europe and Asia. Beet and spinach are among the best known and most useful plants of the order. Many are occasionally used as pot-herbs, as some species of *Chenopodium* and of orache. The fruit of Strawberry Blite (*Blitum capitatum* and *B. virgatum*), a common weed in the s. of Europe, has some resemblance in appearance to a strawberry, from the coherence of

the fleshy perianths of a whole spike or head of flowers, and a sweetish, insipid taste. The seed of Quinoa (q.v.) is used for food as a kind of grain. Some of the chenopodiaceæ are aromatic (see CHENOPODIUM). Some inhabit salt-marshes, and abound in soda, as the saltworts (q.v.).

CHENOPODIUM, *kē-nō-pŏd'ĭ-ŭm:* genus of plants of the nat. ord. *Chenopodiaceæ*, of which some species are well known by the name of GOOSEFOOT, as weeds growing in gardens, on heaps of rubbish, and in waste places. The species are mostly annuals, with entire or toothed leaves, which, in some of them, have a sort of mealy hoariness. They are natives mostly of Europe, and of the temperate parts of Asia; but some are natives of America, into which also some of the common European species have found their way, and are naturalized as weeds. The genus has hermaphrodite flowers, with perianth of five small green scales, five stamens, and solitary, flat seeds. The leaves of many species are used as a substitute for spinach, particularly those of the GOOD HENRY, WILD SPINACH, or ENGLISH MERCURY (*C. Bonus Henricus*), a perennial plant, native of Britain and other parts of Europe, often found growing by waysides, with stem more than a foot high, powdered with minute transparent globules, and large, alternate, triangular, arrow-shaped, entire leaves It is cultivated in some places, chiefly for the leaves, though the young shoots are used as asparagus. *C. intermedium*, *C. album*, etc., annuals, common in waste places, also are excellent substitutes for spinach. *C. olidum* or *vulvaria* (STINKING GOOSEFOOT), an annual with extremely nauseous odor, growing in waste places in Britain, etc., especially near the sea, is a popular medicine, in much repute as an antispasmodic and emmenagogue. *C. Botrys*, native of the s. of Europe, with pinnatifid leaves resembling those of the oak, and hence called JERUSALEM OAK, is in use as an expectorant and anthelmintic. It is not fetid like the species last named, but agreeably fragrant. *C. Ambrosioides* has a strong aromatic odor, is used in Mexico instead of tea, and is much cultivated in France, an infusion of it being deemed useful in nervous disorders. *C. anthelminticum*, the WORM-SEED of the United States, has a strong and somewhat aromatic odor, and a high reputation as a vermifuge. Its seeds chiefly are used, or the essential oil extracted from them, called *Oil of Worm-seed.* More important than any of these species, as affording a principal article of food in the countries of which it is a native, is QUINOA (q.v.).

CHEOPS, *kē'ops:* a king of Egypt, so-called by Herodotus, and by others Chembes, Souphis, and Saophis. The original name, Khufu, supposed to mean wealthy, or hairy, is found on several monuments and on stones in the great pyramid at Ghizeh, which he built at enormous expense of life and treasure. To finish it, according to one tradition, he sacrificed his daughter's honor. His op-

pression and consequent unpopularity gave rise to reports of his impiety in closing the temples and stopping the worship of the gods: the monuments, on the contrary, credit him with building or repairing temples of Isis, Athor, etc. He is said to have written a sacred book held in much esteem; this may have formed part of the ritual. He had a war in the Sinaitic peninsula, in Arabia, as recorded by a rock tablet at Wady Magarah. Eratosthenes says Cheops reigned 29 years and Manetho gives him 63, which are fixed by Lepsius as B.C. 3095–3032; but these dates are made extremely doubtful by a difference of nearly 2,000 years in estimating those of Menes, who, according to the lists, preceded Cheops by 898 years. His character and reign are so nearly prehistoric as to be involved in great obscurity. See EGYPT: PYRAMID.

CHEPHREN: see KHUFU II.

CHEPSTOW, *chĕp'stō:* river-port in the s.e. of Monmouthshire, England, on the right bank of the Wye, 2½ m. from its junction with the estuary of the Severn and 14½ m. e.n.e. of Newport. It lies between bold cliffs, on a slope rising from the river, in the midst of beautiful and grand scenery. There is a fine view from a rock called Windcliff, 970 ft. high, 3½ m. up the river. The streets are broad. Here occurs the highest tide in Europe, rising suddenly, with a fierce current, often 50, and on rare occasions even 70 ft. Large vessels reach the town. One of the wells of the town ebbs and flows with the tide. Over the Wye is a railway bridge combining the suspension and tubular principles of construction. Chepstow has a magnificent castle, built in the 11th c., and a fine Benedictine priory recently restored. It has few manufactures, but exports corn, cider, bark, iron, millstones, timber, and salmon, a considerable coasting trade being carried on. In the neighborhood are the ruins of Caldicott Castle and Tintern Abbey. Pop. 3,000.

CHEQUE, n. *chĕk:* see CHECK.

CHEQUERS: see under CHECKERS

CHER, *shär:* tributary on the left side of the river Loire, rising near Crocq, dept. of Creuse, France; flows first by Auzanzes, Evaux, Montluçon, and St. Amand; then n.w. through the dept. of Cher by Vierzon; then w. by Selles, Montrichard, and Bléré to the Loire, which it joins below Tours. Length about 200 m.; navigable for the last 47 of its course.

CHER: central dept. of France, named from the river Cher; lat. 46° 25′—47° 39′ n., and in long. 1° 55′—3° 10′ e. upward of 2,700 sq. m. The surface is mostly level, traversed by well-wooded elevations, and produces corn, fruits, wine, hemp, flax, etc. The climate is mild and pleasant. Agriculture and pasturage of cattle are moderately advanced. Cher is divided into the three arrondissements—Bourges, St. Amand, and Sancerre—Bourges is the chief town. Pop. (1901) 345,543.

CHERASCO, *kā-răs'kō:* town in the province of Cuneo, n. Italy; on the Tanaro, 30 m. s.e. of Turin. It has manufactures of silk. A peace was concluded here between Louis XIII., of France, and the Duke of Savoy 1631. 1796, Apr. 26, the place was taken by the French, and here, three days after, the 'Armistice of Cherasco' was concluded between the Sardinian commissioners and Napoleon, by which the latter obtained the right of free passage for his troops through the Sardinian States; and the treaty that followed gave to the French republic Savoy, Nice, and the possessions of Piedmont to the westward of the Alps' highest ridge. Pop. 5,000.

CHERBOURG, *shĕr'bŭrg,* Fr. *shär-bôr':* fortified seaport town and arsenal of France, dept. of Manche; at the head of a deep bay on the n. extremity of the peninsula of Cotentin, on the English Channel, opposite the w. coast of the Isle of Wight; lat. 49° 40′ n., and long. 1° 35′ w. Napoleon I. began to build the great defenses of this n. stronghold of France. His nephew, Napoleon III., developed his plans, but not with the original view of an invasion of England, though this was by some alleged. Occupying a prominent position on the French coast, only some 60 m. removed from the s. shore of England, the harbor-works have been extended, strengthened, fortified, and provisioned with cannon—the dock-yards improved, and facilities of embarkation afforded, to a degree that, as it is unparalleled in ancient or modern times, not unnaturally excites the apprehension of Englishmen. For a description of the stupendous breakwater of C., inclosing a space of nearly 2,000 acres, see BREAKWATER. In connection with its fortifications, this breakwater assumes an importance that attaches to no other work of the kind in existence. At the apex of the angle formed by the meeting of the two branches of the breakwater or *digue*, there is a centre fort or battery, measuring 509 ft. on the inner line of the parapet, which forms a flat semi-ellipse The circular forts at the extremities of the breakwater are remarkably well placed for purposes of defense. Behind the centre battery there is to be an elliptical tower, measuring 225 ft. on the major, and 123 ft. on the minor axis. Altogether there are six large batteries on the mole. The entrances to the harbor are round the ends of the mole; and the passages are further defended by the fortifications of the Ile Pélée, and by the batteries of La Roche Chavaignac and Fort Querqueville. A series of coast redoubts, and the two large fortifications of Les Roches des Flamands and du Homet, are behind this outer zone of defense. 'The arsenal,' says W. H. Russell, who visited Cherbourg during the summer of 1860, 'is inclosed by a continuous line of bastion and curtain of a very elevated profile, defended by outworks, wet and dry ditches, and by profuse batteries of the heaviest guns, either in casement or *en barbette*. Wherever you look, you fancy that on the spot you occupy are specially pointed dozens of the dull

black eyes from their rigid lids of stone.' Altogether, besides the batteries on the mole, Cherbourg is defended by 24 regular forts and redoubts. The town itself is commanded by La Roule (an exceedingly strong fort) and Fort d'Octeville on the heights behind. The military port of Cherbourg consists of an outer harbor of 776 ft. in length by 663 ft. wide, its minimum depth being 58 ft., and the entrance to which is 206 ft. wide at its narrowest point. This harbor communicates by means of a lock with a floating basin, 957 ft. long by 712 wide. The outer harbor has four building-slips for battle-ships, besides some smaller slips, and a fine graving-dock. In 1858, Aug., an inner floating-harbor was inaugurated by the Emperor of the French, in presence of the queen and many of the lords and commons of Great Britain. This harbor, entirely cut out of the solid rock, has a length of about 930 yards, and a breadth of 437 yards, and is surrounded by beautiful building-slips and capacious graving-docks. Cherbourg has on the s.e. a commercial port distinct from the others, where an active coast trade in farming produce, etc., is carried on. Cherbourg is a port of call for Atlantic liners. The town has undergone much modern improvement, has electric lighting and street railroads, one of the finest theatres in France, a fine equestrian statue of Napoleon I., public gardens, with a monument to Millet, the painter, and a restored 13th century parish church. There are some manufactures of hosiery, chemicals, lace, and leather, and sugar and salt refineries; but the industrial energies of the great bulk of the population are absorbed in the arsenal and dock-yards. Cherbourg is a very ancient place; in the 10th c. it was known under the name of *Carusburg*. In 1758, Cherbourg was taken by the English, who destroyed the fortifications. Here the *Alabama*, Confederate cruiser, was found by the Union war-ship *Kearsarge*, and destroyed outside the harbor, after accepting the challenge to fight, 1864, June 19. Pop. 43,000.

CHERBULIEZ, *shĕr-bü-le-ā′*, Antoine Élisée: 1797–1869, Mar. 4, b. Geneva: political economist. He was a prof. at Geneva and Zurich, opposed Proudhon and the Socialists, and wrote *L'Utilitaire* (3 vols., Geneva 1828–30), and *Précis de la Science economique* (2 vols., Paris 1862). He died at Zurich. The family was noted for literary talent; Victor Cherbuliez, the brilliant novelist, is a nephew of Cherbuliez.

CHERIBON, or Sheribon, *shĕr′e-bon:* Java, a province or residency on the coast toward the n.w. of the island, between Krawang and Tegal. It was formerly an independent kingdom. It has a population of about 1,500,000. The productions are coffee, timber, cotton, areca-nuts, indigo, sugar, and also a little pepper. The rhinoceros is native here. The capital of the province, of the same name, is on the north coast, at the mouth of the river Cheribon. Population of the city, about 15,000.

CHERIMOYER, *chĕr-ĭ-moy'er*, or CHIRIMOYA, *chĭr-ĭ-moy'a* (*Anona Cherimolia*): the most esteemed fruit of Brazil and Peru; now common and even naturalized in some parts of the E. Indies, and other tropical countries of the old world. It is a fruit of most delicious flavor, is sometimes described as the finest of all fruits, and sometimes as inferior only to the mangosteen. It belongs the same genus with the custard apple (q.v.). Both flowers and fruit emit a pleasant fragrance, but when the tree is covered with blossoms, the odor is so strong as to be almost overpowering. The fruit varies from the size of an orange to 16 lbs. or upward in weight. It is roundish, or heart-shaped. Externally, it is greenish, covered with

Cherimoyer:
Branchlet with leaves, and section of fruit.

small-knobs and scales. The skin is rather thick and tough. Internally, the fruit is snow-white and juicy, and contains a number of small brown seeds. The eatable part is soft like a custard, and forms almost the entire mass of the fruit. The C. attains its highest excellence only in particular soils and situations, and some varieties are much finer than others.

CHERISH, v. *chĕr'ĭsh* [F. *chérissant*, loving dearly; *chérir*, to love dearly, to cherish—from F. *cher*, dear—from L. *carus*, dear]: to treat with tenderness and affection; to foster; to give warmth; to protect and aid; to harbor in the mind, as feelings of ill-will. CHER'ISHING, imp.: N. support; encouragement. CHER'ISHED, pp. *-ĭsht:* ADJ. com-

forted; fostered. CHER'ISHER, n. one who. CHER'ISHINGLY, ad. *-li.* — SYN. of 'cherish': to nourish; nurture; foster; feed; nurse; comfort; support; entertain.

CHERKASK': see TCHERKASK.

CHEROKEES, *chĕr-ō-kēz'* (TSARAGHEE, or CHELAKE): important Indian tribe formerly dwelling in w. Fla., Ga., Ala., Miss., and Tenn; divided into the Otari of the mountains and the Airate or Erate of the lowlands, with subdivisions into seven clans. They were usually friendly to the English colonists, recognized the king's supremacy 1730, ceded part of their territory and allowed the erection of forts 1755, and after some disturbances made peace 1761. They sided with the British in the revolutionary war, and lost their lands s. of the Savannah and e. of the Chattahoochee, but were confirmed in possession of the remainder by the treaty of Hopewell, 1785, Nov. 28, where they acknowledged the United States as independent and sovereign. After this they were gradually crowded out by the advance of immigration and the rapacious injustice of the whites. More of their territory was surrendered by treaties of 1791 and 1798, and many of the tribe went beyond the Mississippi; there were 3,000 of them on the Arkansas 1817. Those who remained largely exchanged hunting for farming, became in good degree Christianized under the labors of Moravian and other missionaries, and rendered good service in the war of 1812; but all was of no avail, the Indian 'must go.' Georgia outlawed them, the supreme court denied their appeal, and the U. S. govt., after confessing its inability to fulfil obligations of its own assuming, made a treaty 1835 with a small minority of the tribe for the removal of the whole, then some 27,000. John Ross and his followers objected, but yielded under the persuasion of Gen. Scott and 2,000 soldiers, sent 1838 to effect the transfer. They were placed in the Indian Territory, where they now possess some 5,960 sq. m. in the n.e. corner and 8,500 in the n. Their healthful progress was interrupted by the civil war, in which they at first took the southern side. Though many fought for the Union, they had to give up parts of their lands to their emancipated slaves. They have advanced greatly in prosperity and the arts of peace, assisted by Moravian, Baptist, Methodist, and Congregational missions. George Guess, one of the tribe, devised an alphabet 1821, and since then books and papers have been printed in the two dialects of their language; a third, Gidoowa, has been lost. A Cherokee newspaper is now published at the capital, Tahlequah, and books are becoming more numerous. The C.'s are governed by a national committee and council elected for two years, and a chief chosen for four. According to the census of 1900 the Cherokee reservation had a population of 101,754. The Cherokees live in dwellings, not wigwams. They have an asylum for orphans, seminaries, and 100 private schools, $80,000 being expended annually for education. No government school is maintained. The nation is governed by a chief and a legislature. Several

of the tribe have attained distinction, and others are becoming known as business men and capitalists. See INDIANS, AMERICAN.

CHEROOT, n. *shĕ-rôt'* [from a native name]: a kind of cigar, originally from Manilla, in the Philippine Islands.

CHEROPOTAMUS, n. *kĕr'ō-pŏt'ă-mŭs* [Gr. *choiros*, a hog; *potămos*, a river]: a fossil animal very closely related to the hog family.

CHERRY, n. *chĕr'rĭ* [F. *cérise*—from L. *cer'ăsus*, so named from *Cerăsus* in Pontus: Ger. *kirsche*]: a well-known small fruit, of a red, and sometimes black color, consisting of a pulp surrounding a pip or stone; the *Cĕrăsus ăvĭum*, or *C. vulgāris*, ord. *Rosācĕæ:* ADJ. ruddy. CHERRY-PIT, a child's play. CHERRY-BRANDY, brandy in which cherries have been steeped. CHERRY-STONE, the hard kernel of the cherry.

CHER'RY (*Cerasus*) : genus or sub-genus of plants of which the best known yields one of the most esteemed stone fruits. This is usually regarded as a sub-genus of *Prunus* (see PLUM), but is erected by some botanists into a distinct genus on very slender grounds, the most obvious distinction between the species of *Cerasus* and the true species of *Prunus* being that, in the former, the young

Common Cherry (*Ce'rasus dura'cina*):
*a*, branchlet with leaves and fruit; *b*, flower.

leaves are conduplicate, or folded up, and in the latter they are convulute, or rolled together. Two species are generally regarded as the parents of the garden cherries usually cultivated, *Prunus* or *Cerasus Avium*, and *P. cerasus* or *C. vulgaris*—the former having the underside of the leaves hairy and a small austere fruit; the latter having smooth, shining leaves and a more juicy fruit. *C. Avium* attains a height of 40–50 ft. *C. vulgaris* is a smaller tree. Both

have white flowers in clusters or nearly sessile umbels, and both are generally regarded as natives of Britain, and of the middle and south of Europe. In a wild state they are usually called GEAN (*guigne*), and *C. Avium* is frequently planted —not only because it is exceedingly ornamental when in flower, but also as a timber-tree, being of rapid growth, with firm, strong, close-grained wood, suitable for the purposes of cabinet-makers, turners, and musical-instrument makers. But, according to some botanists, there is only one species, of which these are varieties; and according to others, *C. vulgaris* is a native of Syria and other parts of w. Asia, and is only naturalized in Europe, having been brought first to Italy by Lucullus, after his victory over Mithridates (B.C. 74), from Kerasunt, on the coast of the Black Sea, whence it derives its name. The cultivated varieties of the C. are very numerous and differ considerably in size, color, and flavor. The fruit of the C. supplies the inhabitants of parts of France with a principal article of food, especially the wood-cutters and charcoal burners of the forests: among their modes of preparing it is that of making it a principal ingredient in soups. It ripens in Norway and East Bothnia as far n. as lat. 63°. In some parts of Germany the public roads are lined for many miles together with avenues of C. trees. Besides its use for the dessert and for preserves, the C. is used extensively for making liqueurs : see KIRSCH-WASSER : MARASCHINO. Varieties of C. with double flowers, and with pendulous branches, are frequently planted for ornament in shrubberies, and few trees or shrubs are more beautiful. The *All-saints C.* produces flowers almost all summer, and even in autumn. Its fruit is small and rather acid. The other species of C. are numerous. Some species are low, or even prostrate shrubs, as *C.* or *P. chamæcerasus*, the GROUND C. of the s. of Europe and of Siberia; and *C.* or *P. pumila*, the SAND C. of N. America.—The genus or sub-genus *Cerasus* contains also the different kinds of Bird C. (q.v.) and Choke C. (q.v.), including the American WILD C., famous for its medicinal bark; the MAHALEB (*C.* or *P. Mahaleb*) of the s. of Europe, and the CAPOLLIM (*C.* or *P. capollim*) of Mexico and Peru—the first famous for the fragrance of its flowers, and the second for the fragrance of its fruit; and the CHERRY-LAUREL (q.v.).

CHER'RY-LAUREL, or LAU'REL-CHERRY : name given to those species of *Prunus* or *Cerasus* (see CHERRY) which have evergreen leaves. They are often called also LAUREL. They have small flowers in long racemes, and small fruit ; the fruit of a nauseous taste ; and most parts of the plant, but particularly the leaves and kernels, remarkably abounding in hydrocyanic (prussic) acid, and therefore very poisonous.—The COMMON C., sometimes called the BAY-LAUREL, or LAUREL-BAY, very often spoken of simply as the LAUREL or COMMON LAUREL (*Prunus* or *Cerasus Laurocerasus*), is a shrub, sometimes of very large size, with ovato-lanceolate, convex, smooth, remotely serrated, shining, yellowish-green leaves, and erect racemes of flowers. It is originally from Asia, but is now naturalized through-

cut the s. of Europe, and is one of the most common ornamental shrubs in Britain, where it suffers only from such severe frosts as are of rare occurrence. It is propagated by seeds, layers, and cuttings. Its leaves resemble bitter almonds in smell and taste, and contain in great abundance the same essential oil (see ALMONDS, VOLATILE OIL OF), rich in hydrocyanic acid. From these leaves, by maceration in water for 24 hours, and subsequent distillation, is obtained the *Laurel-water* (q.v.), or *Cherry-laurel water* sometimes employed in medicine as a substitute for hydrocyanic acid, and which formerly was so much used as a poison. The leaves are sometimes employed also for flavoring puddings, sauces, etc., and though safer for such purposes than oil of bitter almonds, yet ought to be used with caution.—Another species, also a common ornamental shrub, but not quite so hardy as the common C., is the PORTUGAL LAUREL (*Prunus or Cerasus Lusitanica*), native of Portugal, a large shrub—sometimes a tree—with dark-green leaves and lateral racemes It does not grow so well under the shade of trees as the common cherry-laurel. From the dissimilarity of form and color of their leaves, these species present a pleasant appearance when mixed as they usually are in the shrubbery.

CHERRY VALLEY: village of Otsego co., N. Y., 68 m. w. of Albany, on a branch of the Albany and Susquehanna R. R. It was entirely burned 1778, Oct. 11, by 500 Indians and tories, led by Major Walter Butler and Joseph Brandt; 16 soldiers and 32 others, chiefly women and children, were massacred, and the remainder of the inhabitants carried off. C. V. was incorporated 1812. It is pleasantly situated on C. V. creek, and has an academy, a bank, and a newspaper. Pop. (1870) 930; (1880) 856; (1900) 772; (1910) 792.

CHERSIPHRON : see EPHESUS.

CHERSO, *kĕr'sō:* island of Illyria, belonging to Austria; in the Adriatic, 12 m. s.s.w. of Fiume ; abt. 105 sq. m. A bridge unites it with the adjoining isle of Lossini. Its surface is generally hilly and rugged, with forests in the north. Pop. 9,550.

The chief town is Cherso, at the head of a bay on the w. side. Pop. 4,670.

CHERSON' : see KHERSON.

CHERSONESE, n. *kèr'sō-nēz*, less correctly *chér'-* [Gr. *chersos*, land; *nēsos*, an isle]: a tract of land, of any extent, nearly surrounded by water; a peninsula.

CHERSONESUS, *kĕr-so-nē'sŭs:* ancient name of several peninsulas and promontories in Europe, the most important of which are the Crimea (q.v.), *C. Taurica;* Gallipoli (q.v.), *C. Thracia;* and Jutland (q.v.), *C. Cimbrica.*

CHERT, n. *chért*, or HORNSTONE [W. *cellt*, flint-stone; *callestr*, pyrites, flint: OE. *chart*, common rough ground: Ir. *ceart*, a pebble: perhaps only a corruption of *quartz*]: variety of quartz, always massive, and having a kind of granular appearance and structure. It is common in the

Mountain Limestone, Oolite, and Green-sand formations; sometimes forms rocks, and often contains petrifactions. It passes into common quartz and chalcedony; also into flint and flinty slate. Its colors are gray, white, red, yellow, green, or brown. The name C. is sometimes limited to the finer varieties, and the coarser are called Hornstone.—The name C. is very commonly given to the silicious concretions which occur as nodules and layers in limestone rocks, like flints in the chalk. When these materials exist to such an extent as to render the limestone useless for economical purposes, it is said to be 'cherty.' CHERTY, a *-ti*, flinty.

CHERTSEY, *chĕs'se* (Anglo-Saxon, Ceort's Eye or Island): town in the county of Surrey, England, on a low strip of land between the right bank of the Thames, here crossed by a stone bridge, and the brook from Virginia Water, 20 m. w.s.w. of London. It is irregularly built, consisting chiefly of two long cross-streets, and is surrounded by villas. The chief trade is in malt and flour. There are also boat-building and lumber yards. C. arose in a monastery founded 666, rebuilt 964 by Edgar and the Benedictine monks. The South Saxon kings had a seat here during the heptarchy. Charles James Fox lived on St Anne's hill, an abrupt elevation about a mile from the town. Cowley the poet resided in Chertsey. Pop. of parish 12,800.

CHERUB, n. *chĕr'ŭb*, CHER'UBIM, n. plu. *-ô-bĭm*, or CHERUBS [Heb. *kerub*—from *kârab*, to grasp: Syriac, *cerûb*, great, strong]: a figure represented under the form of various creatures; a heavenly being. CHERU'BIC, a. *-ô'bĭk*, or CHERUBICAL, a. *chĕr-ô'bĭ-kŭl*, angelic. CHER'UBIM, n. plu. *-ô-bĭm* [Heb. plu. of cherub]: angels; heavenly beings. CHERUBIN, a. *chĕr'ô-bĭn*, having the character of a cherub: N. cherubs.

CHER'UB: Hebrew name of a winged creature with a human countenance, which in the Scriptures is almost always represented in connection with Jehovah, and especially as drawing his chariot-throne. Cherubim are mentioned in the Old Testament first as guards of paradise; a C. with a flaming sword hindered the return of the expelled human pair. In the Holy of Holies in the tabernacle, and afterward in the temple, cherubim wrought in embossed metal were represented above the mercy-seat, or covering of the ark of the covenant, so that they appeared to rise out of it. Figures of cherubim were also wrought into the hangings of the Holy of Holies. The cherubim that appear in the visions of Ezekiel and the revelations of John depart much from the early representations. In Ezekiel they have the body of a man, whose head, besides a human countenance, has also that of a lion, an ox, and an eagle; they are provided with four wings, two of which support the chariot of Jehovah, and serve to fly, while the other two cover the body; the hands are under the wings, and the whole body is spangled with innumerable eyes. In the Revelation, four cherubim covered with

eyes, and having six wings, surround the throne of Jehovah ; the first has the face of a lion, the second of an ox, the third of a man, and the fourth of an eagle. This gave rise at a very early period to the symbolical figures of the four evangelists, the human countenance being associated with Matthew, that of the lion with Mark, of the ox with Luke, and of the eagle with John. Most Jewish writers and Christian fathers conceived the cherubim as angels; and Dionysius the Areopagite, in his *Celestial Hierarchy*, makes them a separate class in the first hierarchy. Most theologians also considered them as angels, until Michaelis showed them to be a poetical creation; and Herder, in his *Spirit of Hebrew Poetry*, compared them to the griffins that watch treasures and other fabulous figures. They are now considered by nearly all biblical scholars, not as living angels, nor as representations of these ; but as symbolic forms used as vision-emblems of grand and mysterious Divine powers developed in the great forces of nature emblems perfectly fitted to the cloudy splendors and vast perspective of prophecy. In Christian art they are generally represented as sexless figures, with wings from the shoulders, the legs also either covered by wings, or having wings substituted for them. Very often they have also a glory round the head.

Cherub.

CHERUBINI, *kā-rô-bē'nē*, Luigi-Carlo-Zenobio-Salvatore-Maria: 1760, Sep. 8—1842, Mar. 15; b. Florence: eminent musical composer. He received his early musical training in Florence, under the Felici (father and son), P. Bizzari, and C. Castrucci. He afterward studied for a year at Bologna under Sarti, to whom he owed his thorough knowledge of counterpoint and fugue. He visited London, 1784, where he brought out two operas, *La Finta Principessa* and *Guilio Sabino*, and afterward settled in Paris for the remainder of his life, visiting Italy occasionally. His *Ifigenia in Aulide* appeared 1788; and 1791 his *Lodoïska*, which work first secured proper appreciation for his genius and effected a change in the whole character of the French school of composition. These operas were followed in succession by *Elisa*, *Medea*, *Les Deux Journées* (known also as *Die Wasserträger*), *Anacreon*, and *L'Hôtellerie Portugaise*. His latest opera, *Ali Baba*, was produced, after a long interval, 1833. Besides operas, C. wrote numerous masses, motets, and other sacred compositions of so great merit that Beethoven regarded him as the greatest living

master of sacred music; also quartets for the violin, viola, and violincello, and symphonies. It is worthy of remark that the richness of his instrumental music, formerly made a ground of objection, now appears moderate as contrasted with the prodigalities of the modern orchestra. His latest work, *Cours de Contrepoint et de Fugue,* appeared 1835. C. died at Paris where he was director of the Conservatoire, and his *Requiem,* the last of his masses, was performed at his funeral. See *Cherubini:* Memorials illustrating his Life, by Bellasis (Lond. 1874).

CHERUP, v. *chĕr'ŭp* [from CHIRP, which see]: to twitter; to make a noise as a bird: N. a short, sharp noise CHER'UPPING, imp. CHER'UPPED, pp. *ŭpt.*

CHERUSCI, *ke-rus'sī:* German tribe mentioned first by Cæsar. They dwelt n. of the Silva Bacencis, or Hartz Forest, but the exact boundaries of their territory cannot be ascertained. They are memorable chiefly in connection with their great leader Arminius, or Hermann, who, having formed an alliance with other German tribes, attacked and annihilated the Roman legions under Varus, in the forest of Teutoburg, A.D. 9. After the death of Arminius, internal strifes broke out among the C., and Tacitus says that they were subjugated by the Chatti, a neighboring tribe. Notwithstanding this they again appear as the chief tribe in the military league of the Saxons about the end of the 3d c. In the beginning of the 4th c., they are included among the peoples who had leagued against Constantine, and toward the close of the same c. are still mentioned distinctly by Claudian.

CHERVIL, n. *chĕr'vĭl* [AS. *cerfille:* mid. L. *chærŏphyl'lum*—from Gr. *chairo,* I rejoice; *phullon,* a leaf—from the smell of the leaves], (*Anthriscus Cerefolium*): umbelliferous plant, long cultivated as a pot-herb, and used especially in parts of the continent of Europe, in soups and for a garnish etc., in the same manner as parsley. It is a native of Europe. The leaves have a peculiar, somewhat sweetish, pleasantly aromatic smell and taste, by which the plant may be known from its congener *Anthriscus vulgaris* or *Scandix Anthriscus,* a poisonous weed, whose leaves have a disagreeable smell, and which is distinguished also by its hispid fruit. There is a variety of C. with large roots, for the sake of which it is cultivated.—The umbelliferous plant called VENUS' COMB, or SHEPHERD'S NEEDLE (*Scandix Pecten* or *S. Pecten Veneris*), native of Britain and of the continent of Europe, often found in cornfields, and remarkable for the appearance and large size of its fruit, and another species (*S. Australis*) which grows in the s. of Europe, have a taste and smell resembling C., and are used in the same way on the continent. SWEET C., or SWEET CICELY (*Myrrhis odorata; Scandix odorata* of the older botanists), native of the s. of Europe and of parts of Asia, common in the neighborhood of houses in Britain, although probably not a true native, is frequently cultivated in Germany under the name of *Spanish C.* or *Anise C.* In Scotland, the plant is commonly called *Myrrh* by the peasantry. Its smell is peculiarly attractive to bees;

and the insides of empty hives are sometimes rubbed with its leaves, to induce swarms to enter.—The species of *Chærophyllum*, coarse weeds, also are called chervil.

CHESABLE, n. *chĕz′ă-bl*, CHES′IBLE, n. *ĭ-bl*, or CHASUBLE, n. *chăz′ū-bl:* a Rom. Cath. priest's vestment in the celebration of the mass: see CHASUBLE.

CHESAPEAKE AND LEOPARD, AFFAIR OF THE, 1807, June 22. The Chesapeake was a 40-gun frigate destined to relieve the Constitution in the Mediterranean; Capt. James Barron was to go out in her as commander of the Mediterranean squadron. She had been refitted at the Washington navy-yard, and made final preparations at Norfolk, reporting ready for service on June 19. On the 22d she got under way, but expecting no attack from powers at peace with this country, was in no shape for immediate action, and being four months behind time, could not wait. The gun deck was obstructed with various lumber, sick seamen were lying on the upper deck, the cables were not stowed away, the powder-horns were not filled, and the crew was raw and not exercised at the guns. At this time, in the heart of the Napoleonic wars, the high wages and relatively safe employ of the American merchant and even naval service, with the rights of American citizenship immediately obtained, raised the normal rate of desertion from the British navy so much that its officers were much embarrassed and greatly incensed; and Great Britain claimed, as for many years afterward, the right of searching neutrals for deserters and contraband. At the same time, her press-gangs crimped for service any strays who could be caught, of any nationality, and rarely gave any redress. Early in 1807 a British fleet lay off Norfolk watching to intercept some French frigates in the Chesapeake; and a boat's crew deserted bodily and escaped to Norfolk. The captain was told that they had enlisted on the Chesapeake,—which was true of only one, and he under an assumed name; and meeting the latter and another deserter in the streets of Norfolk, was defied. Another vessel, the Melampus, reported three deserters gone to the Chesapeake, but it was proved that they were native Americans illegally pressed. Admiral Berkeley, at Halifax, on complaint of his officers, ordered any of his vessels to overhaul and search the Chesapeake on meeting her outside the United States jurisdiction. The order was carried by the 52-gun flagship, Leopard, Capt. Humphreys, who, after consulting with the local commandant at Lynnhaven, followed the Chesapeake out beyond Cape Henry, hailed her, and sent a boat with a copy of Berkeley's order. Barron, who believed that he had no deserters aboard except the Melampus', which were not really such, honestly denied having any, but refused the right to search; the messenger lieutenant at once left, and within five minutes the Leopard came closer, and Humphreys announced that he should carry out his orders. Barron at once called his men to quarters, and did everything

that skill, coolness, and courage could do to prepare for action, but the Leopard almost at once poured her whole broadside into the Chesapeake, and then two more in rapid succession, without the possibility of her opponent replying. Three of the latter's men were killed, Barron and 17 others wounded, and it was certain that the vessel would be sunk in a short time if the fire kept up, and Barron, to stop a useless massacre, struck his flag. The one English deserter was hunted out and hanged, the three Americans taken and imprisoned. The mass of the country was on fire with indignation; the extreme Federalists at first justified the English course, but were compelled by public feeling to exhibit some patriotism. Even the timid Jefferson, whose course had brought on the catastrophe, interdicted British cruisers from American ports, and demanded disavowal and reparation from Great Britain, which were not given; but he did nothing to prevent the recurrence of such outrages. The unfortunate Barron, who had behaved like a brave man and good officer, and whose instructions had bound him to do nothing to bring on collisions, was made the scapegoat of the popular fury. His own captain screened himself by accusing him, and a court-martial on board his own vessel from Jan. 4–8, 1808, Capt. John Rodgers, president, after acquitting him of all blame in every respect but one, found him guilty in not preparing for action as soon as he read Admiral Berkeley's order, and sentenced him to five years' suspension without pay or emoluments. The gross injustice of this is now admitted. One of the judges was Stephen Decatur (q.v.), who never ceased reflecting on Barron till the later challenged and killed him.

CHESAPEAKE AND SHANNON, Battle of, 1813, June 1. In the War of 1812, the former vessel (see Chesapeake and Leopard, Affair of the), cruised to no purpose from 1812, December, till 1813, April, and arrived at Boston April 9. Her captain, Evans, left her on account of ill health, and about the middle of May was replaced by Capt. James Lawrence, famous for the brilliant victory of the Hornet over the Peacock. He accepted against his will; nearly all the officers and crew were new, and the latter second-rate, totally untrained, and sulky over questions of prize money. On May 25 Capt. Broke of the Shannon, lying outside, sent away his consort, the Tenedos, to have a fair chance to fight the Chesapeake alone, and repeatedly urged Lawrence to arrange a duel between the ships. In theory they were evenly balanced; they were of almost exactly the same length; the Chesapeake now carried 50 guns, the Shannon 52; the Chesapeake had 379 officers and crew against the Shannon's 330; but the latter had been trained for seven years under Broke himself, kept in constant artillery and other practice, and was a thoroughly disciplined fighting machine, men used to each other and the officers. On June 1, however, Lawrence, whose experience had made

him despise British skill and courage alike, sailed out to meet his enemy, and at 5.30 P.M. they engaged. After a couple of broadsides, the Shannon's shot cut the Chesapeake's stays, and the latter drifted helplessly stern foremost toward her adversary. There was no salvation but to make sail forward or to board, and both were impossible. The Shannon's broadsides and the musketry fire from her tops swept the Chesapeake diagonally from stem to stern, without the latter being able to fire a shot in reply, beating in the stern ports and killing or wounding every man on the quarter-deck and the after part, including the men at the wheel. Just before the vessels struck, Lawrence ordered up his boarding party; but almost at the same instant he fell mortally wounded by a musket ball, and was carried below. Not a living person was on the quarter deck, and Broke, with 50 boarders rushed on board unresisted just as the vessels parted. He was in deadly peril from his own guns, which killed his first lieutenant as the latter pulled down the American flag, and so fierce was the resistance, from the 30 or so of the American crew who had rallied at the forecastle, that 37 of the boarding party were killed or wounded, including Broke himself. Had the rest of the crew shown even decent pluck, not one of the British would have escaped; but the upper party, heavily overmatched, were killed or driven below, and though the dying Lawrence called out from the cockpit, 'Don't give up the ship! Blow her up!' the remainder refused to go above, and surrendered. The Chesapeake lost 61 killed and 85 wounded; the Shannon 33 killed and 50 wounded. The former was towed into Halifax as a prize, turned into a British war vessel, and in 1820 broken up. Lawrence died four days after the battle

CHESAPEAKE BAY, in Maryland and Virginia, and dividing the former State into two parts, is the largest inlet on the Atlantic coast of the United States, being 200 miles long, and from 4 to 40 broad. Its entrance, 12 miles wide, has on the north Cape Charles, and on the south Cape Henry, both promontories being in Virginia. The bay has numerous arms, which receive many navigable rivers, such as the Susquehanna on the north, the Potomac, Rappahannock, and York on the west, and the James on the southwest. Unlike the shallow sounds toward the south, this network of gulfs and estuaries, with its noble feeders, affords depth of water for ships of any burden, virtually carrying the ocean up to the wharves of Baltimore and the arsenal of Washington.

CHESAPEAKE BAY DOG: the American retriever, so named from the district in which it first became well known. It is a large animal, with a thick coat about an inch and a half long, with an under coat of soft woolly fur to protect the skin. Its legs are rather short, and the feet are well webbed, and it is held to be the finest retriever in the world.

CHESAPEAKE STAGE: the rocks of the Chesapeake Stage, a younger Miocene of the Atlantic coast, are clays and marls in the north, and marls and limestones in the south. They differ chiefly from the older Miocene or Chattahoochee and Chipiola Stages, in the character of the fossils, particularly in the north; these fossils indicating that the climate was much colder in the newer than in the old Miocene. This change of climate is believed to have been due to a change in the direction of the Gulf Stream, which flowed farther from the coast than before. The stage is well developed at Duplin County, N. C., at Yorktown, Va., and along rivers in Maryland. Strata of this age are found at Martha's Vineyard, Mass., and in Texas. See MIOCENE; TERTIARY.

CHESEBRO, *chēz′brō*, CAROLINE, American novelist; b. Canandaigua, N. Y., 1825, March 30, d. Piermont, N. Y., 1873, Feb. 16. In 1851 a collection of her writings was published entitled *Dream Land by Daylight: a Panorama of Romance.* This was followed by *Isa, a Pilgrimage* (1852); *Victoria, or the World Overcome* (1856); *Philly and Kit* (1856); *Peter Carradine* (1863); *The Beautiful Gate, and Other Tales* (1863); *The Foe in the Household* (1871); her best work.

CHESELDEN, *chĕs′el-den*, WILLIAM: 1688–1752, Apr. 11; b. Barrow-on-the-Hill, Leicestershire: English surgeon and anatomist. He commenced his medical studies at the age of 15, at 23 established himself as a lecturer on anatomy, and in the following year was elected a fellow of the Royal Soc. He was afterward appointed surgeon to St. Thomas's, St. George's, and Westminster hospitals, where he acquired great reputation as an operator. In this respect, few surgeons, if any, ever surpassed him. He died at Bath. Cheselden's principal works are: the *Anatomy of the Human Body* (1713), long a text-book on the subject in England; a *Treatise on the Operation for the Stone* (1723); and *Osteology, or Anatomy of the Bones* (1733). He also contributed several valuable papers to the Philosophical Transactions of the Royal Society.

CHESHIRE, *chĕsh′ėr:* maritime county in the w. of England, bounded n. by the river Mersey, and partly also by the Irish Sea; lat. 52° 56′—53° 54′ n., long. 1° 47—3° 11′ w. Its greatest length, from n.e. to s.w. is 58 m.; greatest breadth, 32; area, 1,052 sq. m., of which only one-tenth is uncultivated; circuit, 200 m., of which 8 are coast. The surface forms an extensive, nearly level plain between the Derbyshire and Welsh mountains, well wooded, and studded with small lakes or meres, and occupied chiefly by grazing and dairy tracts, which are among the most important in England. This plain, comprising four-fifths of the surface, rests on New Red Sandstone, and is crossed near the middle by a tract of high ground running s.w. from a promontory overlooking the Mersey, near the mouth of the Weaver, to Beeston castle rock, 366 ft. high. On the e. border of the county is a line of New Red Sandstone hills.

In the n.e. is part of the Lancashire coal-field. In the e. are large tracts of peat, and much of the county is wet and rushy. The n.w. part of Cheshire forms a hammer-headed peninsula called Wirral, about eight m. broad, between the estuaries of the Dee and Mersey. Coal measures appear on the w. side of this peninsula, as well as on the w. border of the main part of the county. The chief rivers are the Dee, Mersey, and Weaver, which are navigable. The Dee skirts the county on the w. 55 m., and the Mersey on the n. for 40 m. The Weaver rises in the e. part of the county, and runs 40 m. w.n.w. into the Mersey. The county contains an almost unrivalled system of canals, including the celebrated Bridgewater canal, and is traversed by the main line of the London and Liverpool railway, and the Crewe, Chester, and Holyhead railway. The chief mineral products are rock-salt and coal. The rock-salt, discovered 1670, and mined by gunpowder, is found near the Weaver and its branches, especially near Northwich, at the depth of 28 to 48 yards, in two beds, the upper being 15 to 25 yards, and the lower above 40 yards thick, under a stratum of hard rock, 25 to 35 yards thick. The mines, one occupying 35 acres, when lighted up, resemble a fairy palace sparkling with gems and crystal. Much salt is made also from brine-springs 20 to 40 yards deep. Coal is worked in the n.e. part of the county. There are also lead (with cobalt) and copper-mines, and in almost every part of the county freestone, limestone, millstone, and marl are found. The climate is moist. The soil is mostly a clayey or sandy loam, with marl and peat, and very fertile. The soil and climate are well fitted for pasturing, dairy-farming, and cheese-making, the chief agricultural occupations. About 90,000 cows are kept in Cheshire, capable of producing about 15,000 tons of cheese. In the cattle plague of 1865-66 upward of 70,000 cows perished, 36,000 of these being slaughtered as a preventive. There are extensive manufactures in the towns. Chief towns are Chester (the county-town), Macclesfield, Stockport, Congleton, Knutsford, and Birkenhead. The county of Cheshire returns six members to parliament. Cheshire has some Roman roads, tumuli, barrows, remains of religious houses, and many old castles and halls. The 12th Roman legion occupied Chester till the 3d c. Egbert, 828, added Cheshire to the Anglo-Saxon kingdom of Mercia. William the Conqueror erected Cheshire into a county palatine, under Hugh Lupus, with an independent parliament and eight barons. Henry VIII. subordinated it to the English crown; but Cheshire did not send representatives to the English parliament till 1549, and the separate jurisdiction ceased entirely only in 1831: see PALATINE. Pop. (1881) 644,037; (1901) 601,070.

CHESHIRE, *chĕsh′ėr*, JOSEPH BLOUNT, American Protestant Episcopal bishop: b. Tarboro, N. C., 1850, March 27. He was graduated at Trinity College in 1869, and practised law from 1872 to 1878. He was ordained to the priesthood in 1880, and, after holding various rectorships, became Bishop of North Carolina in 1893.

CHESNEY, *chĕs'nĭ*, Charles Cornwallis: 1826, Sep. 29—1876, Mar 19: military historian. The son of a capt. of artillery, he was educated at Tiverton, Exeter, and Woolwich, England; entered the royal engineers as 2d lieut. 1845; was stationed in New Zealand during the Crimean war, and though never in active service, found a new field of usefulness and distinction. Military history being made part of the course of instruction at Sandhurst, he was appointed to that chair 1858, and transferred 1864 to the Staff College. Here he delivered the *Waterloo Lectures*, which attracted much attention. He returned to regimental duty 1868; was a member of the royal commission of military education 1868-69; was sent to the continent on a special mission 1871, and reported to govt. on the siege operations of the Franco-Prussian war; rose to brevet lieut.-col., became commanding royal engineer of the London dist., and died of overwork. Besides the book which chiefly made his reputation, he wrote *Recent Campaigns in Va. and Md.* (1863, enlarged 1865; said to be the fairest book on Amer. military affairs by an Englishman); *Military Resources of Prussia and France, and Recent Changes in the Art of War* (1870); and *Essays in Modern Military Biography*, chiefly from the *Edinburgh Review* (1874).

CHESNEY, Francis Rawdon, English explorer: b. Annalong, County Down, Ireland, 1789; d. Mourne, 1872, Jan. 30. He was gazetted to the Royal Artillery in 1805. In 1829 he inspected the route for a Suez canal which he proved to be practicable. His first exploration of the route to India, by way of Syria and the Euphrates, was made in 1831, and he made three other voyages with the same object. He commanded the artillery at Hong Kong from 1843 to 1847. In 1850 he published his *Expedition for the Survey of the Rivers Euphrates and Tigris*, and in 1868 a *Narrative of the Euphrates Expedition.*

CHESNUT, Victor King, American botanist: b. Nevada City, Cal., 1867, June 28. He graduated at the University of California in 1890 and pursued post-graduate work at the University of Chicago and at Columbia University. In 1894 he became assistant botanist in charge of poisonous plant investigation, carried on by the United States Department of Agriculture. He has written: *Principal Poisonous Plants in the United States*; *Thirty Poisonous Plants of the United States*; *Preliminary Catalogue of Plants Poisonous to Stock*, etc.

CHESNUTT, Charles Waddell, American author: b. Cleveland, O., 1858, June 20. While still a child he was taken to North Carolina, where he was educated, becoming subsequently principal of the State Normal School at Fayetteville. He removed to New York and entered journalism temporarily, returning later to Cleveland, where he was admitted to the bar in 1887. He has written *The Conjure Woman*; *The Wife of His Youth and Other Stories*; *Life of Frederick Douglass* (*in Beacon Biographies*); *The House Behind the Cedars*, and *The Marrow of Tradition* (1901); *The Colonel's Dream* (1905).

CHESS, n. *chĕs* [F. *châsse*, the thing or part within which another is covered or enchased]: in *Scot.*, the frame of wood for a window; the iron frame which surrounds a form of types—also spelled CHASE. CHESSES, n. plu. *chĕs'ĕs*, in *mil.*, three fir planks, fastened underneath by cleats, used in pontooning.

CHESS, n. *chĕs* [F. *échec ;* OF. *eschac ;* It. *scacco ;* Sp. *xaque ;* Ger. *schach*—from the cry of check—from Pers *schách* or *sháh*, a king]: game of skill played on a board divided into 64 squares, with king, queen, castles, knights, bishops, and pawns or soldiers. CHESS-BOARD, the board used in the game of chess, of whose 64 squares 32 are of a light, and 32 of a dark color: see CHECK. The origin of chess, the most purely intellectual of all games of skill, has been much disputed; but it is now considered certain that, under the Sanskrit name of *Chaturanga*, a game, essentially the same as modern C., was played in Hindustan nearly 5,000 years ago. In its gradual diffusion through the world in succeeding ages, the game has undergone many alterations and modifications, both in nature and in name; but marked traces of its early Asiatic origin and descent are still discerned by the learned in its nomenclature and other characteristics. From Hindustan C. spread into Persia, and thence into Arabia. The Arabs appear to have introduced the game into Spain and the rest of w. Europe in the 8th c.; and in England chess-play seems to have been known prior to the Norman Conquest. Into Constantinople, and probably some other cities of e. Europe, the game may have been imported from Persia at a period earlier than its Moorish conveyance into Spain.

The original Hindu game was played on a board of 64 squares, as now, but by *four persons*, two being allied against two, as in whist. Hence the name *Chàturanga*, from *chatur*, 'four,' and *anga*, 'a member' or 'component part.' The name *Shatranj*, used by the Persians and Arabs, is a corruption of the Sanskrit. The English, French, and other European names are derived from the Persian term *shah*, 'king.' *Check*, the warning when the king is in danger, is but another form of *shah ;* in fact, 'king' is sometimes used for 'check,' and in German *schach* is the name both of the game and the term of warning. The term *rook* is from the Skr. *roka*, Pers. *rukh*, meaning a ship or chariot; *pawn* is said to be from *peon*, an attendant or foot-soldier.

The books written upon C. would form a library. Of works on the antiquities of the subject are Dr. D. Forbes's *History of Chess* (Lond. 1860). The best modern practical works on the art of chess-play are the *Chess-Player's Handbook*, *C. Praxis*, and *Chess: Theory and Practice*, by Staunton; Morphy's *Games at C.*, edited by Lowenthal; Jaenisch's *Treatise on the Openings*, translated by Walker; and Horwitz and Kling's *Collection of End-games*. The subject is also largely treated in Chambers's *Information for the People*, 'In-door Amusements.'

The game of C. is played upon a square board marked out into 64 square divisions which are colored alternately

black (or some dark color) and white, in order the more clearly to determine and denote the respective movements of the several pieces. In placing the board for play each player must always have a *white* corner square at his right hand. There are two sets of pieces of opposite colors of sixteen men each, and of various powers according to their rank. These sets of men are arrayed opposite each other, and attack, defend, and capture, like hostile armies. The accompanying diagram will best explain the name, form, and place of each man at the commencement of the game.

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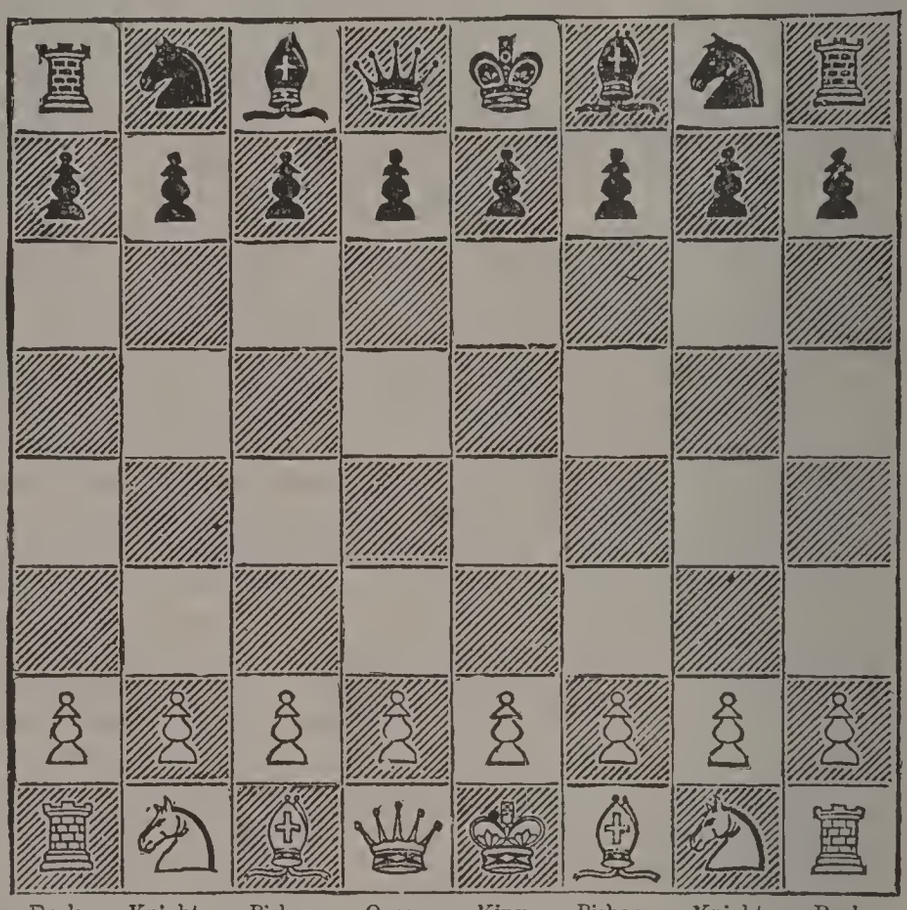


Rook. Knight. Bishop. Queen. King. Bishop. Knight. Rook.

WHITE.

The superior officers occupying the first row on each side are called *pieces;* the inferior men, all alike, standing on the row immediately in front of the pieces, are called *pawns.* Their moves and powers with the peculiar terms used in C., are as follows:

A *pawn,* at his *first* move, may advance either one or two squares, straightforward; but after having once moved he can advance only a single square at a time. In capturing * an adverse piece, however, a pawn moves forward to the next square diagonally either right or left; the pawn never moves backward. On arriving at an eighth square,

* Taking is always performed by lifting the captured man from the board and placing the captor on his square. The pawn is the only man whose mode of taking differs from his ordinary move.

or the extreme line of the board, a pawn may be exchanged for any piece that his owner chooses to call for, except a king; so that a player may possibly have several queens on the board at once. If a pawn, on moving two squares at its first move, pass by an adverse pawn which has arrived at the fifth line, the advanced adverse pawn may take the other *in passing* in exactly the same manner as if the latter had moved but one square; but the adverse pawn is not compelled to take.

A bishop moves any number of squares diagonally, but diagonally only; therefore a bishop can never change the color of his square.

A knight moves two squares so as always to change the color—that is, his move is one square forward or backward with one diagonally. On account of this crooked movement he can leap over or between any surrounding pieces; and therefore a knight's check—unless he can be taken—always compels the king to move.

The rook, or castle, moves any number of squares forward, backward, or sidewise, but not diagonally.

The queen is by far the most powerful of the pieces and moves over any number of squares, either in straight lines or diagonals, forward, backward, or sidewise; so that her action is a union of that of the rook and bishop. At starting the queen always stands on a square of her own color—white queen on white squares.

The king is the most important piece on the board, as the game depends upon his safety. He moves only one square at once, in any direction, except when he *castles*—a term to be explained presently. The king cannot be taken; but when any other piece attacks him he is said to be in *check*, and must either move out of check or interpose some one of his subjects, unless the checking-piece can be captured. When there is no means of rescuing the king from check he is said to be checkmated, and the game is over. Of course the two kings can never meet as they would be in check to each other. *Double-check* is when a piece by being moved not only gives check itself, but also discovers a previously masked attack from another.

*Castling* is a privilege allowed to the king once in a game. The move is performed either with the king's rook or queen's rook—in the former case the king is moved to the king's knight's square, and the king's rook is placed on the king's bishop's square; in the latter case the king is played to the queen's bishop's square, and the queen's rook is played to the queen's square. But the king cannot castle after having once moved, nor at a moment when he is actually in check, nor with a rook that has moved, nor when he passes over a square attacked or checked by an adverse piece, nor when any piece stands between him and the rook with which he would castle, nor when in the act of castling either the king or rook would have to capture an adverse piece.

A *drawn* game results from neither player being able to

checkmate the other; thus, a king left alone on each side must of course produce a draw, as do also a king with a bishop, or a knight, against a king.

*Stalemate*, or the not being able to move either the king or any other piece, also constitutes a drawn game.

*Odds* is a term applied to the advantage which a stronger player should give to a weaker; thus, the removal of a rook or knight from the better player's forces may be fair odds; or if the players are more nearly matched the one may give a pawn. When the odds of a pawn are given it is always understood to be the king's bishop's pawn.

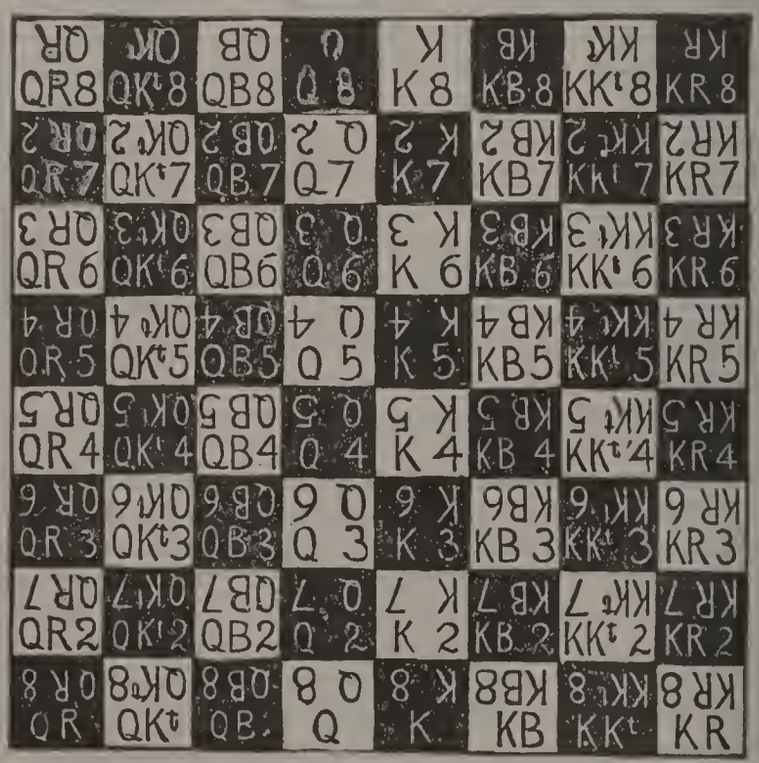
*Gambit* is a technical word implying the sacrifice of a pawn early in the game, for the purpose of taking up an attacking position with the pieces.

Supposing the worth of a pawn to be represented by unity, the following is approximately an average estimate of the comparative value of the pieces: Pawn 1, bishop 3, knight 3, king 4, rook 5, queen 9.

The chess-men being placed, the players begin the engagement by moving alternately; each aiming to gain a numerical superiority by capturing his opponent's men, as well as such advantages of position as may conduce to victory.

The rows of squares running straight up and down the board are called *files*, those running from side to side are called *lines*, and those running obliquely across are termed *diagonals*.

BLACK.




WHITE.

The accompanying diagram will show at once to the learner how each square is named; and by its aid he will speedily be enabled either to play over printed games, or to

record his own. The playing over the following short game will serve him as a little initiatory practice:

| WHITE. | BLACK. |
|---|---|
| 1. King's Pawn two. | 1. King's Pawn two. |
| 2. King's Bishop to Queen's Bishop's 4th. | 2. King's Bishop to Q Bp's 4th. |
| 3. Queen to King's Rook's 5th. | 3. King's Knight to K Bp's 3d. |
| 4. Queen takes King's Bishop's Pawn, giving Black checkmate. | |

The foregoing brief mode of giving a checkmate is called the *Scholar's mate*, and is often practiced upon young and unwary players. Any contractions used, such as 'K' for king, 'B' for bishop, etc., are readily understood by the use of the diagrams.

In the conduct of the game, and in the practice of C., the following rules, precepts, and hints will be found very generally useful:

Play forth your minor pieces early, and castle your king in good time. You may sometimes delay castling with advantage, but not often.

Do not expect to be able to establish an enduring attack with half your forces at home.

Seek to let your style of play be attacking; and remember the gaining or losing of time in your measures is the element of winning or losing the game.

Never touch a piece without moving it, nor suffer yourself or your opponent to infringe any other of the laws of the game.

You will find, when first player, that the opening, springing from your playing 1st king's pawn two, and then your king's knight to the bishop's 3d, is one of the best that you can adopt; but do not adhere to any one opening only.

If you wish to adopt a purely defensive opening, you may play 1st king's pawn one, and follow up with Q P 2, and Q B P 2.

Next to playing with good players, nothing will conduce to improvement more than looking on at two expert players whilst they play. Lacking these advantages it is best to play over openings, and actual games from books or journals.

To prevent blunders and oversights always endeavour to perceive the motive of your adversary's move before you play; and look often round the board to see that you are not losing sight of any better move than the one which you intended, or that you are not suffering yourself to be tempted by a bait.

When an onlooker never interfere by word or motion.

Always endeavor to keep good temper under a loss or defeat, and to bear your adversary's faults with a good grace.

THE LAWS OF CHESS.—The laws of C. are at present in a somewhat unsettled, unsatisfactory condition; but the following are the principal prevailing regulations of the game:

1. If any error have been committed in the placing of the

board or men, either player may claim that the game shall be finished as it stands, after four moves have been completed on each side, but not else.

2. A move once made, by your having moved a piece and left hold of it, cannot be retracted.

3. If you touch a piece you must play that piece; but as long as you retain your hold you can play it where you like. If you touch a piece that cannot move, your opponent may compel you to play your king, unless the king be unable to move. When you touch your pieces for the mere purpose of adjusting them you are bound to say so.

4. If you make a false move your opponent may, at his pleasure, either cause you to retract it and move your king, or he may claim that the false move shall stand, or that you shall make a legal move with the same piece.

5. If you touch one of your opponent's men he may compel you to take that man; or, if that be impossible, to move your king, provided he can move without going into check.

6. If, on the king being checked, due notice is not given the player whose king is attacked is not bound to notice it.

7. In every fresh game, except when one is drawn, the first move alternates.

8. Drawn games, counting as no games at all, the player who had the first move in a drawn game is also entitled to it in the next. (This absurd regulation is fast becoming obsolete; and it is now a common agreement, in playing a series of games, that the move shall invariably alternate.)

9. A player who gives the odds of a piece, is entitled to the first move.

10. The time for consideration of a move is not limited; but a player leaving a game unfinished, without his opponent's permission, loses such game.

11. When at the end of a game one player is left with just sufficient superiority of force to win—such as a king and rook against king, or king and two bishops against king, or king, knight, and bishop against king—he who has the greater force must give checkmate within 50 moves on each side, or else the game is adjudged drawn. This law is framed to prevent unskilful players from wearying their opponents by persisting in the attempt to accomplish what they are too untutored to effect; and it is perfectly just, since the allotted number of moves is amply large enough and to spare.

12. In case of any dispute about the laws, both players are to agree as to an umpire, whose decision is to be considered final.

As there is no branch of chess-study better calculated to advance the skill of a learner than the attentively playing over recorded games between first-rate players, the following example is given of a game played blindfold, simultaneously with five other games, by the celebrated American chess-player, Paul Morphy. This gentleman visited England and the continent of Europe 1858, and in his contests with the best players fairly carried all before him, so that he soon ranked as the greatest chess-player living.

| White—Mr. Morphy. | Black—Mr. C——. |
|---|---|
| 1. P to K 4. | 1. P to K 4. |
| 2. K Kt to B 3. | 2. Q Kt to B 3. |
| 3. K B to Q B 4. | 3. K B to Q B 4. |
| 4. P to Q Kt 4. | 4. B takes Kt P. |
| 5. P to Q B 3. | 5. B to Q R 4. |
| 6. P to Q 4. | 6. P takes P. |
| 7. Castles. | 7. P takes P. |
| 8. Q B to R 3. | 8. P to Q 3. |
| 9. Q to Q Kt 3. | 9. K Kt to R 3. |
| 10. Q Kt takes P. | 10. K B takes Kt. |
| 11. Q takes B. | 11. Castles. |
| 12. Q R to Q. | 12. Kt to K Kt 5. |
| 13. P to K R 3. | 13. K Kt to K 4. |
| 14. Kt takes Kt. | 14. Kt takes Kt. |
| 15. B to K 2. | 15. P to K B 4. |
| 16. P to K B 4. | 16. Kt to Q B 3. |
| 17. K B to B 4, ch. | 17. K to R. |
| 18. Q B to Kt 2. | 18. Q to K 2. |
| 19. Q R to K. | 19. R to B 3. |
| 20. P takes P. | 20. Q to K B squ. |
| 21. R to K 8. | 21. Q takes R. |
| 22. Q takes R. | 22. Q to K 2. |
| 23. Q takes Kt P, ch. | 23. Q takes Q. |
| 24. P to K B 6. | 24. Q takes Kt P, ch. |
| 25. K takes Q. | 25. B takes P, ch. |
| 26. K takes B. | 26. P to K R 4. |
| 27. R to K Kt, and wins. | |

CHESS, or CHEAT (*Bromus secalinus*): plant of the order *Graminaceæ*, and one of the species of Brome Grass. It is a weed which infests wheat fields, where it is with difficulty separated from the wheat. It was at one time supposed valuable, and its cultivation recommended; hence probably its wide dissemination. A rural superstition holds that the wheat is transmuted into chess.

CHESSIL-BANK, *chĕs'sl-bănk* [Ger. *kiesel*, a pebble]: the shifting pebble-beach extending from Portland to Abbotsbury, on the southern coast of England.

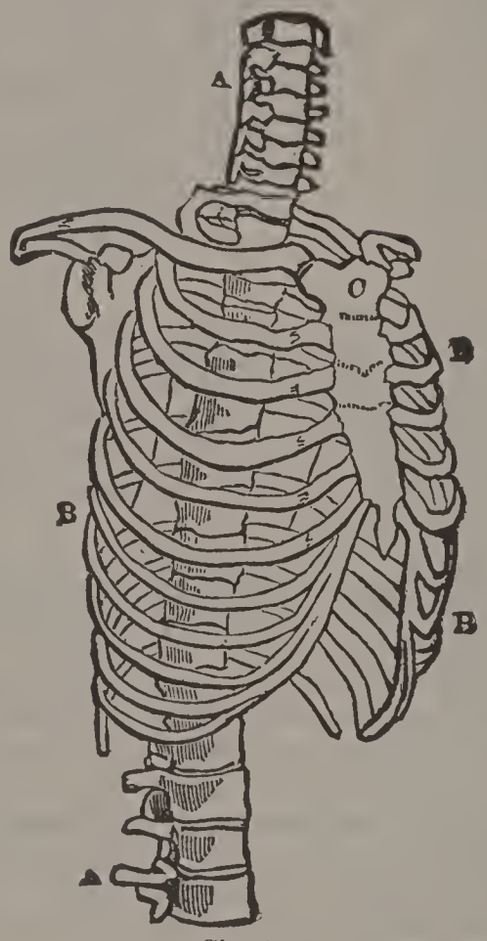
CHESSYLITE, n. *chĕs'ĭ-līt* [from *Chessy*, near Lyons, where abundant]: a mineral of a nearly azure-blue color, also called azurite or blue carbonate of copper.

CHEST, n. *chĕst* [AS. *cist:* Ger. *kasten:* L. *cista:* Gr. *kistē*]: a large box; the cavity of the breast or thorax; a certain quantity of goods, as tea: V. to lay in a chest; to hoard. CHEST'ING, imp. CHEST'ED, pp.: ADJ. having a chest; placed in a chest. CHEST OF DRAWERS, a case of movable boxes called *drawers*.

CHEST, or THO'RAX, in Anatomy: the part of the body which lies beneath the neck and above the abdomen (q.v.), constituting the uppermost of the two divisions of the trunk, or that which contains the heart and lungs, and is bounded externally by the ribs. The C. is somewhat conical in form, the broad or lower end of the cone being shut in by the diaphragm, a large muscular partition which projects upward from the lower ribs, being convex toward the C., and concave toward the abdomen. In respiration (q.v.) the diaphragm descends by its own muscular contraction, while at the same time the ribs are drawn upward and outward by the intercostal muscles. The cavity of the C. is thus enlarged, the lungs are expanded, and air is drawn into them through the trachea or windpipe and bronchi: see LUNGS. The

combination of bone, cartilage, muscle, and tendon entering into the composition of the Chest is such as to permit of expansion-movement to the extent required and yet to guard against over-expansion, which would be fatal to the delicate textures within. The bones of the Chest are at the same time a powerful protection against external injury.

The structures forming the walls of the Chest are: 1. The backbone or spinal column, AA, divided into 24 vertebræ, 12 of which, called the dorsal vertebræ, form the thoracic portion. 2. Twelve ribs, B, B, B, attached to the transverse processes or projecting portions of the dorsal vertebræ, and ending in front in the costal cartilages, by




Chest.

which the ribs are connected with.—3. The sternum or breast-bone, C, which occupies the middle line. 4. The diaphragm (q. v.): see also SKELETON.

The contents of the Chest are the heart, the great arteries and veins, the lungs, the trachea or windpipe, the bronchi or branches of the teachea leading to the lungs, the esophagus or gullet, and the thoracic duct (q.v.), or general terminus of the lymphatic system of vessels, by which the chyle and lymph are discharged into the blood. The very great importance of these parts to life, and their great liability to deranged action, renders the Chest the seat of a large proportion of the diseases which afflict humanity, and especially of those which end in death. In-

deed, of the three organs which the great physiologist, Bichat, called the 'tripod of life'—viz. the brain, heart, and lungs—the Chest contains two.

The diseases of the Chest depend in some cases on alterations in its form, as by rickets (q. v.) and other diseases affecting the bones in early childhood or in youth. The lungs and air-tubes are subject to a great variety of diseases, among which the principal are consumption or phthisis pulmonalis, pneumonia, pleurisy, and bronchitis. The heart is subject to pericarditis, endocarditis, and chronic organic disease of the valves, as well as to enlargement (hypertrophy and dilatation), and degenerations of its muscular texture. The aorta, or great artery, is often affected with degeneration of its walls, and occasionally with aneurism. The great veins are liable to over-distention, and to obstruction by tumors or by coagulation of the contained blood. The thoracic duct is also sometimes obstructed by external pressure; and the esophagus has a number of diseases usually described in connection with the alimentary canal. For most of the diseases here referred to, see either their respective titles, or under Lungs and Heart.

The examination of the Chest by physicians is now conducted not only by an investigation of the symptoms or obvious characters of the disease, but by a minute and elaborate examination into the physical condition of the contained organs by means of auscultation (q.v.), percussion (q.v.), measurement, etc.

CHESTER, *chĕs'tėr*, Colby Mitchell, American naval officer: b. New London, Conn., 1844, Feb 29. He graduated at the United States Naval Academy in 1863; fought under Farragut in the famous battle of Mobile Bay; became captain 1896, June 12; was commandant of cadets at Annapolis 1890-4; commanded the Galena, Richmond, Newark, Minneapolis 1895-7; the Cincinnati during the war with Spain, and the Kentucky 1900-1. From 1897–8 he was commander-in-chief of the South Atlantic squadron; from 1901-2 was at the naval War College; in 1903 became rear-admiral; and from 1902, Nov. 1 to 1906, Feb. 28, was superintendent of the United States Naval Observatory.

CHESTER, Joseph Lemuel, American genealogist: b. Norwich, Conn., 1821, April 30; d. London, England, 1882, May 26. His earlier life was taken up chiefly with mercantile pursuits, but his strong literary tastes found expression in contributions to the *Knickerbocker*. From 1845 to 1850 he was musical editor of Godey's *Lady's Book*, and in 1852 became one of the editors of the Philadelphia *Inquirer* and of the *Daily Sun*. In 1858 he went to England to sell some patent rights, but not succeeding in the undertaking, settled in London, and devoted himself to genealogical investigation. For more than 20 years he collected materials illustrating the ancestry of American families, made special researches for clients, and investigated the English descent of noted Americans, especially that of George

Washington. His greatest work was the editing and annotating of *The Marriage, Baptismal and Burial Registers of the Collegiate Church or Abbey of St. Peter, Westminster,* dedicated to the queen (1876), a work that cost him 10 years' labor, and which he generously allowed the Harleian Society to issue as one of its publications. He was a founder of this society in 1869, and edited five of its volumes. His non-genealogical writings were: *Greenwood Cemetery, and Other Poems* (1843); *Treatise on the Law of Repulsion* (1853); *Educational Laws of Virginia; The Personal Narratives of Mrs. Margaret Douglas* (1854); *John Rogers, the Compiler of the First Authorized English Bible, the Pioneer of the English Reformation, and its First Martyr* (1861), a work of great industry and research.

CHESTER: city of Delaware co., Penn., on the Delaware river, and on the Philadelphia, Wilmington, and Baltimore, the Baltimore and Ohio, and the Philadelphia and Reading railroads; 15 m. w.s.w. of Philadelphia. It is the oldest town in Penn., founded by the Swedes 1643, and originally called Upland; here Penn's provisional assembly was held, 1682. It was chartered 1701, and was the capital of Chester co. till Delaware co. was set off, 1789. Its chief growth has been of late years; it was incorporated as a city 1866. Chester is an important agricultural trading centre, with manufacturing interests, including rolling-mills and steel-casting works, blast furnaces, oil refineries, brass foundry, tube works, manufactures of machinery, cotton and woolen goods, carriages, etc. There are over 300 establishments, employing 7,680 work people. The Crozier (Bapt.) Theol. Seminary, the Pennsylvania Military College, and Swarthmore College are the chief of many excellent schools, and the city has many fine buildings, electric lighting, and street railways. Pop. (1890) 20,226; (1900) 33,988; (1910) 38,537.

CHESTER: ancient and episcopal city, municipal and parliamentary borough, and river-port, capital of Cheshire, England, on the right bank of the Dee, 22 m. from the mouth of its estuary, 16 m. s.e. of Liverpool. It stands on a rocky sandstone height, and is mostly inclosed in an oblong quadrangle of ancient walls, seven or eight ft. thick, nearly 2 m. in circuit, and with four gates, and now forming a promenade with parapets, where two persons can walk abreast. Chester cathedral is an irregular massive structure of crumbling sandstone, 375 by 200 ft., with a tower of 127 ft. It was formerly the church of the abbey of St. Werburgh; for 650 years was one of the richest in England. St. John's Church, now partially in ruins, is supposed to have been founded by Ethelred 698. The Dee is crossed by a superb stone arch of 200 ft. span. Chester has manufactures of lead, iron-foundries, chemical works, and an iron-ship-building yard. The chief exports are cheese, copper, cast-iron, and coal. Chester has many charitable and religious institutions, a blue-coat school, founded 1700, training college for teachers, school of art, museum, public halls, and parks.

The ancient castle has undergone restoration and the navigation of the river has been improved.

C. was *Devana Castra,* or Colonia Devana, an important Roman station, and has yielded many Roman remains—as masonry, coins, inscriptions, fibulæ, altars, a hypocaust, and a statue of Pallas. Not till 828 was C. taken by the Saxons from the Britons. Its strength made it a refuge against the descents of the Danes and Northmen, but the Danes took it 894. Ethelfrida retook it, 904, and rebuilt the walls. From the Norman conquest to the time of Henry III., the earls of Chester had their own courts and parliaments at C., with eight subfeudatories and the superiors of the great religious houses, Cheshire being then a county palatine. Henry III. made his eldest son Earl of Chester, a title held since by the Prince of Wales. Llewelyn ravaged C. 1255. The 25 famous C. mysteries or religious plays by Randle, a monk (1250–60), were acted in the church. After a long siege, the parliamentary forces defeated those of Charles I. at C., and took the city. Pearson and Porteus were bishops of Chester. Trinity Church contains the remains of Matthew Henry, the biblical commentator. The commerce of C. has steadily declined since the rise of Liverpool. Pop. 36,300.

CHESTERFIELD, *chĕs-tĕr-fēld:* municipal borough in Derbyshire, near the Hipper and Rother rivulets, 24 m. n.n.e. of Derby, by rail. There are manufactures of leather, silk, lace, earthenware, and machinery; and there are several blasting-furnaces in the neighborhood. The manufactures are increasing rapidly, and the minerals in the neighborhood, including coal, iron, potters' and brick clay, slates, and lead, are being greatly developed. Trade is facilitated by a canal connecting C. with the Trent, and by the main line of the Midland railway. Trinity Church contains the grave of George Stephenson. Pop. 27,200.

CHESTERFIELD, Earl of (Philip Dormer Stanhope): 1694, Sep. 22—1773, Mar. 24; b. London; eldest son of the third Earl of C.: English statesman and author. He studied at Cambridge, 1714 made the tour of Europe, and the following year was appointed a gentleman of the bedchamber to the Prince of Wales. About the same time, he was elected M.P. for St. Germains, Cornwall. In 1726, on his father's death, he became Earl of C., and in 1727 was sworn a privy councilor. In 1728, he was appointed ambassador extraordinary to Holland, and in 1730 was made a knight of the Garter and lord steward of the household, but soon resigned that office. An eloquent and frequent speaker, he was active in all important business in the house of lords, and was for several years the strenuous opponent of Sir Robert Walpole, then premier. In 1744, he connected himself with the administration, and in 1745 was reappointed ambassador to the Hague, but was soon nominated lord-lieut. of Ireland, where he rendered himself exceedingly popular. He became one of the principal secretaries of state, 1746, Oct., but two years later, declining health caused him to resign office, and in 1752 he was

seized with deafness. Distinguished by brilliancy of wit, polished grace of manners, and elegance of conversation, he lived in intimacy with Pope, Swift, Bolingbroke, and other eminent men of the day. Dr. Johnson, whose dictionary, on its appearance, he affected to recommend, called him 'a wit among lords and a lord among wits.' He wrote several papers, on temporary subjects, in *The Craftsman, The World,* periodicals of the time; but he is now best known by his *Letters to his Son,* Philip Dormer, written for the improvement of his manners. These letters have been often republished, and they afford a good idea of the mental and moral calibre of the author, whom they show as a man of high culture and fine taste in social matters, not troubling himself with any deep or spiritual views of human life.

CHESTERFIELD INLET: long and narrow gulf, penetrating to the w. from the n.w. of Hudson's Bay; extreme dimensions, 250 and 25 m.; lat. and long. of its mouth, 63° 30′ n., and 90° 40′ w. C. I. is studded nearly throughout with islands.

CHESTNUT, or CHESNUT, n. *chĕs′nŭt* [OF. *chastagne* and *chastaigne:* F. *châtaigne*—from L. *castan′ĕă:* Gr. *kas′tanon,* a chestnut—from *Kas′tana* in Pontus, where abounding: Dut. *kastanie:* Ger. *kesten*], (*Castanea*): genus of plants of the nat. ord. *Cupuliferæ,* closely allied to the beech (*Fagus*), and distinguished from it by long male catkins, longitudinally set with groups of flowers, a 5–8-celled ovary, and compressed rounded nuts. The name is derived

Branchlet, Leaves and Catkins of Sweet Chestnut.

from the town of Kastana, in Pontus, Asia Minor. The COMMON C., SPANISH C., or SWEET C. (*C. vulgaris*), is said to have been brought from Asia Minor first to Sardinia, and thence to have gradually extended over the s. of Europe, where it has long been naturalized, and forms extensive woods. It is an ornamental, stately, or, in exposed situations, a very spreading tree, of great size and longevity; the still surviving C. of Totworth in England was known as a boundary-mark in the reign of King John. A celebrated C. tree on Mount Etna measured 204 ft., in cir-

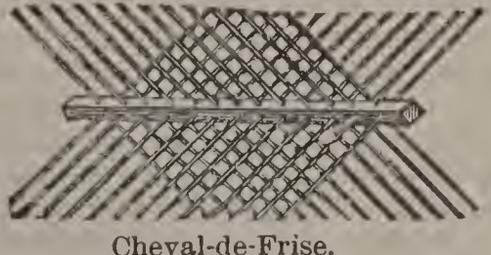
DWARF CHESTNUT.

cumference of trunk. The C. has oblongo-lanceolate, acuminate, serrated, smooth leaves. The timber is durable and hard, and is used in house-building, for furniture, and for many other purposes. The timber of the C. so much resembles that of the oak, as in old buildings to be distinguished with difficulty. The bark is used for tanning, but is worth only about half the price of oak-bark. Young C. trees are much esteemed for hop and espalier poles. The C. thrives as a timber tree even in Scotland, although it does not generally ripen its fruit. In Devonshire, and some other parts of England, it is planted for its nuts. It thrives through all the middle latitudes of Germany but dislikes a damp foggy atmosphere. It prefers a dry, light soil, and, is thrifty only where there is a dry subsoil. The nuts are generally two in each husk. They form a principal part of the food of the poor in the s. of Europe, being used either roasted or boiled, and often ground into flour, and made into a kind of bread. They contain 15 per cent. of sugar, and by pressure yield a sugary juice, which readily undergoes the vinous fermentation, and from which a crumb-like kind of sugar may be obtained. The best kinds of chestnuts are called by the French *Marrons.* When cultivated for nuts the C. is usually grafted, by which means the better varieties are secured. Other species of C. also bear eatable fruits; those of the AMERICAN C. (*C. Americana*), a tree much resembling the common C., and of the DWARF C., or CHINCAPIN (*C. pumila*), a low tree, or more generally a shrub of 7–8 ft. high, are used in America. The fruit of the dwarf C. is of the size of a common hazel nut; the nut is convex on both sides. The plant reaches its s. limit on the banks of the Delaware. A number of species are natives of the east. The inhabitants of the mountains of Java eat the fruit of the SILVERY C. (*C. argentea*), and the TUNGURRUT (*C. Tungurrut*), boiled or roasted, like the common chestnut. Both of these are large trees, the Tungurrut reaching a height of 150 ft. The HORSE C. (q.v.) is entirely different from the true chestnut.

CHESUNCOOK LAKE, *chē-sŭn'kûk:* an expansion of the Penobscot river, in Piscataquis co., Me.: lat. 45° 45′ to 46° 5′ n., long. 69° 30′ w. It is 24 m. long and 2 to 4 m. wide.

CHETAH, n. *chē'tă:* see CHEETAH.

CHEVAL-DE-FRISE, n. *shĕ-văl'-dē-frēz'*, CHEVAUX-DE-FRISE', n. plu. *shĕ-vō'-* [F. *cheval,* a horse; *frise,* a corruption of *Friesland—lit.,* a horse of *Friesland*]: in *forti-*



Cheval-de-Frise.

*fication,* a hastily-constructed substitute for a regular abattis, to stay the progress of an advancing enemy. It may

be constructed in any way of wood or iron, provided it presents an array of sharp or ragged points toward the enemy. Sometimes it is made of barrels or centres of timber, with spears four or six ft. long springing out from all sides, in such a way as to constitute both a support and a defense. Among the *matériel* of an army under the care of the engineers, are sometimes comprised chevaux-de-frise formed of cylindrical iron barrels, about 6 ft. long, each having 12 holes to receive as many spears; the spears can be packed away in the barrel, when not in use. Each such piece constitutes a *cheval;* and many such, ranged end to end, form *chevaux*, to be used in ditches around a fortification, on the berme beneath the parapet, behind the glacis, across a breach in the rampart, or in any spot where a check to the storming party is needed. At Badajoz, during the Peninsular war, great service was rendered by chevaux-de-frise formed of sword-blades fixed into beams of wood. The name is said to have been a jocular appellation derived from 'Friesland horse,' because first used by the peasantry of Friesland against cavalry in their defensive war. The name is given also to an arrangement of iron spikes to prevent persons climbing over walls, etc. EN CHEVAL, *ăng shĕ-văl'*, applied to a body of troops when it stretches at right angles across a road. A CHEVAL, placed so as to command two roads, or the space between two sides.

CHEVAL-GLASS, *shĕ-văl'glăs* [F. *cheval*, a horse]: a looking-glass, showing the full-length figure; a dressing-glass—so named from its size.

CHEVALIER, n. *shĕv'ă-lēr'* [F.—from *cheval*, a horse—from mid. L. *caballārĭus*—from L. *caballus*, a horse]: a horseman; a knight; a gallant knight: in *heraldry*, a horseman armed at all points: see BANNERET: CHIVALRY.

CHEVALIER, *shĕh-vâ-le-ā'*, or *shvâ-le-ā'*, MICHEL: 1806, Jan. 13–1879, Nov, 28; b. Limoges: French economist. At the age of 18 he was admitted a pupil of the Polytechnic School; thence he went to the school of mines, and some days before the revolution of July, he was attached as an engineer to the dept. du Nord. Led away by the theories of the St. Simonians, he was for two years editor of the *Globe*, organ of that sect. Joining the schism of M. Enfantin, he took an active part in the compilation of the *Livre Nouveau*, the standard of their doctrines, and in 1832 suffered six months' imprisonment, on account of his free speculations in regard to religious and social questions, which were regarded an outrage on public morals. On his liberation he at once retracted all that he had written in the *Globe* contrary to Christianity, and against marriage, and obtained from M. Thiers a special mission to the United States, to inquire into the systems of water and railway communication there. The results were published in his *Letters from North America* (1836, 2 vols. 8vo). After a visit to England he issued a work entitled *Material Interests in France: Public Works, Roads, Canals, Railways* (1838, 8vo). He was named, successively, chevalier of the Legion of

Honor, councilor of state (1838), a member of the superior council of commerce, and of the royal council of the university; and, in 1840, prof. of political economy in the College of France. In 1840, he was re-established in the corps of mines as engineer of the first-class; and in 1846, elected a member of the chamber of deputies. Under the republic he lost his various employments. He published, 1848, *Letters on the Organization of Labor and the Question of the Laborers;* and, after the *coup d'état* of Dec. 2, was restored to his professorship, and named councilor of state In 1860, C. assisted Mr. Cobden in carrying into effect the commercial treaty between France and England, and was created a senator. He became a grand officer of the Legion of Honor, 1861. C. wrote also *Political Economy* (1842–50); *Probable Fall of the Value of Gold* (1859—translated by Cobden); *Mexico, Ancient and Modern* (1863), etc.

CHEVERIL, v. *shĕv'ĕr·ĭl* [F. *chevreuil*, a roebuck: OF. *chevrel*, a kid]: in *OE.*, a kid; kid-leather. CHEVERIL CONSCIENCE, a conscience that will stretch; an elastic conscience.

CHEVERUS, *shĕv'ē-rŭs*, JEAN LOUIS ANNE MADELEINE LEFEBVRE DE, D.D.: 1768, Jan. 28—1836, July 19; b. Mayenne, France: first Rom. Cath. bishop of Boston. He entered the College of Louis le Grand, 1781, was ordained 1790; served as curate at Mayenne, was persecuted for not taking the oath prescribed by the assembly, went to England 1792, and taught French and math. in a Protestant school. Resigning his property at home to his brother and sisters, he crossed the sea, 1796, and joined the mission at Boston, where his eloquence attracted hearers and his apostolic manners gained affection. After 3 months' missionary labor in Me. he was recalled to Boston on an outbreak of yellow fever, ministered devotedly to the sick without regard to creed, and won such esteem that the Mass. legislature consulted him as to the form of an oath for voters, and his church of the Holy Cross was built, 1803, largely by Protestant contributions, Pres. John Adams heading the list. C. was among the founders of the Athenæum, and often lectured before learned bodies and preached in Protestant churches. Much against his will, he was made bishop of Boston, 1810; as such he founded an Ursuline convent at Charlestown and greatly extended the domain of his faith in New England. With manners unaffected by his elevation, he yearly visited the Penobscot Indians in Me Warned by asthma to seek a milder climate, and appointed bishop of Montauban by Louis XVIII., he gave all his goods to the clergy and the poor and returned to France 1823. He was made abp. of Bordeaux and peer of France by Charles X., restored to the latter rank by Louis Philippe after the revolution of 1830, and created cardinal 1836, Feb. 1. He turned his palace into an asylum for the sufferers by a flood at Montauban, and again into a cholera hospital at Bordeaux, with the inscription *Maison de Secours.* He died at Bordeaux. His life was written by Hamon or Huen Dubourg, and twice translated.

CHEVES, *chĕv'is*, LANGDON, LL.D.: 1776, Sep. 17—1857, June 25; b. Rocky River, Abbeville dist., S. C.: statesman. He began to earn his living in Charleston at the age of 10, and to study law at 18: was admitted to the bar 1797, and in ten years had the then huge professional income of $20-000. He was in congress 1811–16, and made, 1811, an eloquent speech, heard and praised by Irving, on the merchants' bonds; was chairman of the naval committee 1812, and of that of ways and means 1813; speaker of the house 1814–15, and defeated Dallas's scheme to recharter the U. S. Bank. Declining re-election, he became a judge of the S. C. superior court 1816–19. As pres. of the board of directors of the U. S. Bank, 1819–22, he largely restored its credit. He was chief commissioner of claims, 1822, under the treaty of Ghent, and lived at Philadelphia and Lancaster, Penn., till 1829, when he retired to a plantation in S. C. and refused further office. He favored a southern confederacy, but opposed the secession of S. C. alone, 1832, and again at the state convention 1852. He was also a delegate to the Nashville commercial convention 1850. His works are confined to speeches, letters, and reviews. He died at Columbia, South Carolina.

CHEVET, n. *shĕ-vā'* [F., a bolster, a bed-head]: the termination of a church behind the high altar, when of a semicircular or polygonal form; the choir.

CHEVIOT HILLS, *chĭv'e-ŭt* or *chĕv'e-ot:* range of hills occupying contiguous parts of the counties of Northumberland and Roxburgh, on the English and Scotch borders, running 35 m. from near the junction of the Till and Tweed in the n.e. to the sources of the Liddel, in the s.w. The principal points are C. Hill, 2,676 ft. and Peel Fell, 1,964. West of Carter Fell, these hills chiefly consist of carboniferous sandstone and limestone, with protrusions of trap. The e. portion is porphyritic, and includes higher and more or less conical hills. In the C. H. are the sources of the Liddel, Tyne, Coquet, and some branches of the Tweed. Grouse abound, and the golden eagle is seen. These hills afford pasture for the Cheviots, a superior breed of sheep. They have been the scene of many bloody contests between the English and Scotch.

CHEVISANCE, n. *shĕv'ĭ-zăns* [F. *chevissant*, mastering, managing; *chevir*, to master, to manage]: in *OE.*, achievement; gain or profit in trade.

CHEVRETTE: see GYN.

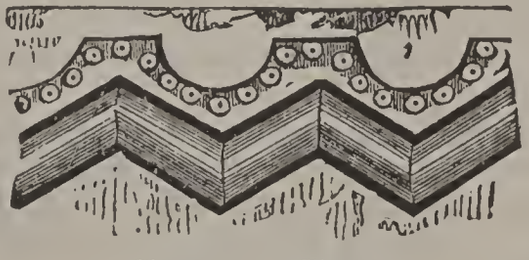
CHEVREUL, *she-vrėl'*, MICHEL EUGENE: distinguished French chemist, born 1786, Aug. 31, at Angers, in the department of Main-et-Loire. In 1820 he was made an examiner in the Polytechnic School, and in 1824 director of the dyeing department in the manufactory of the Gobelins. This last position led him to institute a series of accurate researches on colors, the results of which he made known in a series of *Mémoires* of the Academy of Sciences. Previous to this C. had made himself known in the scientific world by a variety of researches and writings. In 1826, he was made a member of the Academy; and in 1830

professor of applied chemistry in the Museum of Natural History. Besides a great number of articles in the *Journal des Savants*, beginning with 1820, the following works of C deserve mention: *Leçons de Chimie appliquée à la Teinture* (1828–1831); *De la Loi du Contraste simultané des Couleurs et de l'Assortiment des Objets coloriés* (1839); *Théorie des Effets Optiques que présentent les Etoffes de Soie* (1846); *De la Baquette divinatoire, du Pendule, et des Tables tournantes* (1854); *Des Couleurs et de leur Application* (1864); *L'Acide Avique* (1871). C. is a commander of the Legion of Honor. His 100th birthday was celebrated with much enthusiasm in 1886, when C. still enjoyed good health. D, 1889, Apr. 9.

CHEVRON, n. *chĕv'rŏn* [F. *chevron*, a rafter—from mid. L. *capronem*, a log or beam: Sp. *cabrio*, a rafter]: a figure of two rafters meeting at the top; in *her.*, one of the honor-

Chevron. Chevronel. Per Chevron.

able ordinaries, representing the couples or rafters of a house and supposed to betoken the accomplishment of some memorable work, or the completion of some business of importance, generally the foundation of his own family by the bearer The C. is formed of two lines placed pyramidically, i.e., joined together at the top, and descending to the extremities of the shield in the form of a pair of compasses. *Chevronel*, a diminutive—half the size—of the chevron. *Per chevron*, or *party per chevron*, is where the shield is divided by a line in the form of the chevron. C. in *arch.* is a molding in the form of a succession of chevrons, otherwise called a zigzag molding. In general it is characteristic of Norman architecture, but is found also



Chevron, or Zigzag:
Andover, Hants.

with the pointed arch, during the transition period from Norman to Early English. CHEVRONS, stripes or bands of white or gold lace, worn on the sleeve as badges by non-commissioned officers of regiments. The corporals, and the various grades of sergeant, have chevrons varying from one to four in number. CHEVRONED, a. *-rŏnd*, having a chevron. CHEVRON-BONES, small elongated bones or pro-

cesses placed below the vertebræ of the tails of certain animals.

CHEVROTAIN, *shĕv'rō-tān'* [OF. *chevrot*, a little goat—from *chevre*, a goat]: small ruminant animal, light and graceful, native of many of the mountains of Asia. Chevrotains form a family of ungulates distinct from *Bovidæ* and *Cervidæ*, and in some respects nearer to the *Suidæ*.

CHEVY, n.: see CHIVY.

CHEVY CHASE, *chĕv'ĭ chās:* most famous of British ballads. In its present form, the piece does not seem older than about the beginning of the 17th c., though doubtless more ancient versions existed and are partly incorporated. It is impossible to reconcile its incidents with history, but the event commemorated appears to have been the battle of Otterburn, 1388, Aug.—a fight which Froissart declares to have been the bravest and most chivalrous in his day. According to the ballad, Percy vowed that he would enter Scotland, and take his pleasure for three days in the woods of his rival, and slay the deer therein at will. Douglas, when he heard the vaunt, exclaimed: 'Tell him he will find one day more than enough.' Accordingly, at the time of the hay-harvest, Percy with stag-hounds and archers, passed into the domains of his foe, and slew a 'hundred fallow-deer and harts of grice.' When the English had hastily cooked their game, and were about to retire, Earl Douglas, clad in armor, and heading his Scottish spears, came on the scene. Haughty challenge and defiance passed between the potentates and the battle joined. In the centre of the fray the two leaders met, but an English arrow struck Douglas to the heart. Percy chivalrously took the dead man by the hand, and declared that he would have given all his lands to save him, for a braver knight never fell by such a chance. Sir Hugh Montgomery, having seen the fall of Douglas, dashed on Percy, and struck his spear through his body a long cloth-yard and more. Although the leaders on both sides had fallen, the battle, which had begun at break of day, continued till the ringing of the curfew-bell. Scotchmen and Englishmen both claim the victory. When the battle ended, representatives of every noble family on either side of the border lay on the bloody greensward.

CHEW, v. *chô* [AS. *ceowan*, to chew—from *ceac*, the jaw: Dut. *kaauwen*, to chew—from *kauwe*, the jaw]: to crush with the teeth; to masticate. CHEW'ING, imp. CHEWED, pp. *chôd*. CHEW THE CUD, to eat the food over again, as a cow; to think; to meditate.

CHEWINK, *chē'wĭnk*, or GROUND ROBIN (*Pipilo erythrophthalma*), sometimes called Towhee Bunting: bird belonging the family of *Fringillidæ* or finches. It is 7½ to 9 inches long, the wing 3 to 4 inches, the tail 4 inches or more. Its colors are black and brown, varied with white and red. It is common in most parts of the United States, e. of the Missouri. Similar species are found on the Pacific coast. It goes s. in Oct. and returns in spring. It lives chiefly in

thickets and seeks worms, insects, and seeds among the leaves so eagerly that it may be closely approached.

CHEYENNE, *shī-ĕn′:* city, cap. of Laramie co. and the state of Wyo.; on Crow creek, and the Union Pacific railroad at the junction of the Denver Pacific, Colorado Central, C. and Burlington, and C. and Northern railroads; 106 m. n. of Denver, 516 m. w. of Omaha, and 1,260 m. e. of Sacramento; 6,000 ft. above the sea. It lies at the base of the Rocky Mountains, is watered on two sides by the Crow Creek affluent of the S. Platte river, and has a gradual descent from w. to e. It early became the centre of the great beef-growing region, the shipping point for cattle to e. markets, and the supply depot for the trade of the Rocky Mountain region, and in consequence its development has been rapid. While Cheyenne derives its chief importance from its live-stock interests, its facilities as a manufacturing centre are attracting attention. It contains large machine and repair shops of the Union Pacific and the C. and Burlington railroads, breweries, bookbinderies, and saddle and harness, carriage and wagon, woodwork, and cigar factories. Cheyenne claims to have had the first street-lighting electric plant in the country, and has a model sewage system, paid fire dept. with alarm telegraph and telephone communication. The supply of water for fire, drinking, and other purposes is taken from Crow Creek to Lakes Absaracca and Mahpealutah, and as the source is nearly 130 ft. higher than the city, there is sufficient gravitation to furnish all needful force. The works were built by the city at a cost of $150,000. There are many fine churches; good public schools; Rom. Cath. convent school (cost $50,000); public library; terr. capitol, completed 1888 at a cost of $150,000, and then ordered enlarged at a cost of $125,000; co. hospital (cost $35,000); opera-house (cost $40,000); club-house (cost $30,000); Y. M. C. A. building with hall, gymnasium, and reading-room; depots of the Union Pacific railroad (cost more than $100,000), and of the C. and Burlington railroad (cost $90,000); grounds, buildings, and race-track of the Terr. Fair Assoc. ¾ m. n.w. of the city; and, 3 m. w., Fort Russell (recently enlarged at a cost of $150,000), the largest milit. post in the dept. of the Platte. Near the city are a number of more or less noted silver mines. Pop. (1900) 14,087; (1910) 11,320.

CHEYENNE MOUNTAIN: in El Paso co., Colo., southernmost peak of the range lying w. of Colorado Springs. It is a few m. distant from Manitou, and is reached *via* Cheyenne Cañon, down which the 'Seven Falls' cascade plunges in a succession of picturesque leaps a distance of 500 ft. The summit is rendered accessible by a stairway which has been built by the side of this torrent. At the top of the stairway a winding trail leads to the self-selected grave of Helen Hunt Jackson, the popular writer. The view from the summit is weird, majestic, and awe-inspiring. The celebrated Pike's Peak is in the same range, a few m. north.

CHEYENNES, *shī-ĕnz′:* Indian tribe of the Algonquin family, though some place them in the Dakota group. Originally living near the Red River of the North, they were driven beyond the Missouri by the Sioux, and were found by Lewis and Clarke 1803 on the Cheyenne river, near the Black Hills. Becoming skillful horsemen, they extended their raids to New Mexico. Gen Atkinson made the first treaty with them 1825. They soon parted, some remaining with the Ogallala Sioux about the valleys of Powder and Tongue rivers, others removing to the Arkansas river and joining the Arapahoes. They were estimated, 1822, at 3,250, 1847 at 5,300. By a treaty at Fort Laramie 1851, the northern band agreed to permit the making of roads. Numerous treaties have since been made with them, but very poorly kept by govt. and little regarded by settlers. The massacre of 100 men, women, and children at Sand Creek 1864, Nov. 29, by Col. Chivington, of Colo., raised up a war said to have cost 30 or 40 millions. More treaties followed, and more hostilities. Most of the southern band agreed, 1865, to go on a reservation; Gen. Hancock burned at the Pawnee Fork, 1867, the villages of those who refused, and Custer at Washita killed 12 braves and 25 squaws and children. These incidents did not inspire confidence nor end the troubles. The history of this tribe, as of many others, is a confused tale of the white man's wrongs and blunders. In 1899 there were 2,069 of them in Oklahoma on a reservation of 529,682 acres, and 1,349 at the Tongue River Agency in Montana, on a reservation of 371,200 acres. They have only a tribal form of government.

CHEYNE, *chān,* GEORGE: 1671-1743, Apr. 12; b. Aberdeenshire: Scottish physician. He studied at Edinburgh, and in 1700, after taking the degree of M.D., he went to London, where he practiced in winter, and in Bath in summer. From full living he became enormously fat, as well as asthmatic; and having reduced his flesh by a milk and vegetable diet, he recommended it in his principal medical treatises. In 1702, he published *A New Theory of Fevers;* in 1703, a work *On Fluxions,* which procured him admission in the Royal Soc. Among his works are: *Philosophical Principles of Natural Religion* (1705); *Observations on Gout* (1722); *Essay on Health and Long Life* (1725); *The English Malady, a Treatise on Nervous Disorders* (1733); *Essay on Regimen* (1739); *Account of Himself and His Various Cures,* 1743.

CHHATISGARH, *chât-ĭs-gâr′,* or CHUTTEESGURH, *chŭt-tēs-gŭr:* division of Brit. India, under the chief commissioner of the Central Provinces, including the districts of Ráipur, Biláspur, and Sambalpur, with seven small feudatory states; lat. from 16° 50′ to 23° 10′ n., long. from 80° 30′ to 83° 15′ e.; 25,013 sq. m. Two rivers rise in the n.w. corner of C.; the Nerbudda flows w. to the Bombay coast, the Son empties into the Ganges in Lower Bengal. It is mainly a vast fertile plateau, and has of late become a great centre of the Indian grain trade. The capital is Dongargáon. Pop. of division, 3,300,000; of these

over 2,000,000 were Hindus and most of the remainder aborignal tribes.

CHHINDWARA: see CHINDWARA.

CHIABRERA, *ke-â-brā'râ*, GABRIELLO: 1552, June 8—1637, Oct. 14; b. Savona: Italian poet. He was educated at Rome under the care of his uncle, after whose death he entered the service of Cardinal Cornaro, but was obliged to leave it in consequence of the revenge he had taken on an Italian nobleman who had done him an injury. In his 50th year he married. C.'s poetical faculty developed itself late. Having commenced to read the Greek writers at home, he conceived a great admiration of Pindar, and strove successfully to imitate him. He was not less happy in catching the naïve and the pleasant spirit of Anacreon; his canzonetti being distinguished for their ease and elegance, while his *Lettere Famigliari* was the first attempt to introduce the poetical epistle into Italian literature. C. wrote also several epics, bucolics, and dramatic poems. His *Opere* appeared at Venice, 6 vols., 1768.

CHIAN, a. *kī'ăn:* pertaining to Chios, an island in the Ægean Sea.

CHIANA, *ke-â'nâ* (in ancient times, *Clanis*): river in Tuscany, formed by several streams from the Apennines, and falling into the Arno a few m. below Arezzo. With another river of the same name, which, flowing in the opposite direction, enters the Paglia at Orvieto, it waters the perfectly level Val di Chiana, which its overflow formerly rendered the most pestilential district of Italy. Ferdinand III. and his minister, Fossombroni, undertook extensive hydraulic works for improving the bed of the river, which they led through the lakes of Montepulciano and Chiusi, and employed for the artificial irrigation of the whole valley. The district has since become the most fruitful, perhaps, of all Italy—a garden, having pop. of more than 100,000.

CHIANTI, *ke-ân'tē:* mountain-range in Tuscany, 15 m. n.e. of Siena. C. gives name to an excellent wine grown in the neighborhood.

CHIAPA, *che-â'pâ*, or CHIAPAS, *che-â'pâs:* state in the s.e. of the Mexican confederation, lying s.w. of Yucatan; 16,048 sq. m. Near Palanque, one of the towns of C., are extensive and magnificent ruins. Pop. mostly aborigines (1882) 209,362; (1890) 241,404; (1900) 363,607.

CHIARAMONTE, *kē-â-râ-mōn'tā:* town of Sicily, about 32 m. w.s.w. of Syracuse; on a hill. It has well built, regular streets. Wine of good quality is produced in the district. Pop. about 9,000.

CHIARI, *kē-â'rē:* town of Lombardy, 14 m. w. of Brescia, on the railway between that place and Milan. It is an ancient place, many Roman remains being still found here; and formerly it was strongly fortified, but its walls are now ruinous. Silk is the staple manufacture. Pop. 5,999.

CHIARO-OSCURO, n. *kē-âr'ō-ŏs-kō'rō*, also CHIAR-OSCURO, *ke-âr'ŏs-kō'rō* [It. *chiaro*, clear, or light; *oscuro*, dark];

a drawing in black and white; also the art of advantageously distributing the lights and shadows in a picture. C. is not adequately described by saying that it is the art of disposing of both the lights and shadows in a picture, so long as either is regarded apart from the other. It is rather *the art of representing light in shadow and shadow in light*, so that the parts represented in shadow shall still have the clearness and warmth of those in light, and those in light the depth and softness of those in shadow. It is not the making of the one die softly and gradually away into the other, but the preservation of both in combination, as is constantly seen in nature, when the light is not the mere glare of the sun striking on a particular object, nor the shadow the entire absence of the influence of light. That the skilful treatment of C. is extremely difficult, is plain enough from the very small number of artists who attain to it. Still it is a branch of art without at least an approximate mastery of which no painting can be successful in any department. It is as indispensable in portrait painting as in the highest departments of ideal-art: and though a just and even a lofty conception of the subject may be distinctly indicated by attention to form alone, it is impossible that its realization can ever be satisfactorily accomplished by any one who has not mastered this most subtle mode of handling colors. The only mode by which a knowledge of C. can be attained, so as to apply it to practice, is by studying it as exhibited by such painters as Titian, Rubens, Rembrandt, and above all, Correggio.

CHIASMA, n. *kī-ăz'mă* [Gr. *chiasmos*, a marking with the Greek letter $\chi$, a cut crosswise]: in *anat.*, the central body of nervous matter formed by the junction and the crossing of the fibres of the optic nerves.

CHIASTOLITE, n. *kī-ăs'tŏ-līt* [Gr. *chiastos*, marked with the Greek letter $\chi$, or cleft; *lithos*, a stone]: a mineral, so called from the resemblance of the lines on the summits of the crystals to the Greek letter $\chi$; a variety of andalusite or silicate of alumina.

CHIAVARI, *kē-â'vâ-rē:* maritime town of Piedmont, on the gulf of Rapallo, at the mouth of the Sturla, 21 m. e.s.e. of Genoa. The houses in general are well built, with open arcades skirting the narrow streets. C. has several fine churches, the principal of which is the *Madonna del' Orto*. Numerous picturesque old towers, one of considerable size, are scattered over the town. Lace and silk are manufactured here; and the place is noted for its light, handsome, cheap furniture, made chiefly of cherry-wood. The anchovy fishery is important; and in the vicinity are large slate-quarriers. Pop. about 12,000.

The old province of C., of which the above town was the cap., had 155 sq. m. Its surface is generally mountainous but it has valleys of great fertility, yielding grain, grapes, olives, etc. Cattle, sheep, goats, and silkworms are reared. Its pop. was 109,000.

CHIAVENNA, *ke-â-ven'nâ:* town of Lombardy, beautifully situated in the midst of vineyards, at the junction of the valley of St. Giacomo and Val Bregaglia, 38 m. n.n.w.

of Bergamo. It is overlooked by the Rhetian Alps; and its position on the Splügen road secures it considerable traffic. Silk, cotton, and a coarse ware cut out of a soft stone found in the neighborhood, are the chief manufactures. Pop. 2,848.

CHIBCHAS, *chēb′châs*, or MUYSCAS, a tribe of South American Indians who formerly lived east of the Magdalena River, occupying the region from its head waters to the Sierra Nevada de Merida. They were partially civilized and excelled in weaving and pottery making, were skilful goldsmiths and also followed agriculture to a considerable extent. They were ruled by women as well as men in the line of succession, and believed in a Supreme Being, although they worshipped the sun and stars. The Chibchas were conquered in a war with the Spaniards in 1537 and their descendants, who have intermarried with Europeans constitute a large part of the present population of Colombia.

CHIBOUQUE, n. *chĭ-bûk′* [Turk., with F. spelling]: a Turkish tobacco pipe with a very long tube; a hookah.

CHICA, *chē′ka:* red feculent substance, valuable dyestuff, giving orange-red color to cotton. It is obtained by boiling the leaves of a species of *Bignonia* (*B. Chica*), native of the banks of the Cassiquiare and the Orinoco. The Indians use it for painting their bodies. The chica plant is a climber, with abruptly bipinnate leaves, smooth heart-shaped leaflets, and flowers in pendulous axillary panicles. See BIGNONIACEÆ.

CHICA, n. *chē′kă* [a native name: Sp. *chicha*, a beverage from any sweet juice fermented]; called also PITO, or POSO, or MAIZE BEER: in S. America, a fermented liquor made from maize or Indian corn; the common drink of the Indians long before the Sp. conquest; beer made from other grains and vegetable products. Chica from corn is much used in some parts of S. America, and is made in a similar manner to ordinary beer: but the Indians sometimes prepare it by chewing instead of crushing the grains; and that which is so prepared (*Chicha mascada*, or chewed chica) is most esteemed by them. When they wish to make this liquor particularly strong and highly flavored, they have also a practice of pouring it into an earthen jar which contains some pounds of beef; and having made the jar perfectly air tight, they bury it several feet deep in the ground where it is left for several years. On the birth of a child, it is their custom thus to bury a jar of chica, to be drunk at the same child's marriage. Chica has an agreeable flavor, and is very strong and intoxicating. A spirituous liquor is obtained from it by distillation; vinegar also is made from it.

CHICACOLE, *chĭk-a-kōl′:* town of the dist. of Ganjam, presidency of Madras; lat. 18° 18′ n., and long. 83° 58′ e.; 415 m. s.w. of Calcutta, and 435 n.e. of Madras. It stands on the left or n. bank of the Naglaudee, not far from the Bay of Bengal. The place has a reputation for its richly-

worked muslins. It is a military station, and contains, besides its garrison, a native pop. 17,000.

CHICAGO, *shĭ-caw'go*: port of entry, county seat of Cook county, Illinois, second city of the United States and fourth city of the world, surpassed in population only by London, New York, and Paris; situated on the southwestern shore of Lake Michigan, about 18 miles from the south end of the lake, latitude 41° 53′ n., longitude 87° 39′ w. Chicago is the most important railroad centre in the United States, the emporium of Western and Lake commerce, and the principal packing centre and greatest live stock, grain, lumber, and provision market in the world.

The advantages of its situation, at the head of navigation of the four lower lakes, and near the portage from Lake Michigan to the upper waters of an important tributary of the Mississippi, were the fundamental causes of its early growth; while, since the development of the grain regions of the great Northwest, its position on the route around the head of Lake Michigan, in the very pathway of commerce between the West and the East, has ensured it a metropolitan career, the advantage of being a great railway center, with a vast tributary region, being added to those which it possessed as head of navigation. In its marvelous growth, the city is thoroughly typical of the energy and enterprise that have characterized the development of the Middle West in general.

*Population.*—Chicago ranks second in population among the cities of the United States, in 1900 numbering 1,698,575 inhabitants. From 4,479 people in 1840, Chicago increased to 28,269 in 1850; 109,206 in 1860; 298,977 in 1870; and ranked fourth in population in 1880, with 503,298 inhabitants. In the following decade, its rate of gain surpassed that of any other city, the population in 1890 numbering 1,099,850. An official estimate of the Census Bureau at Washington (1906, Dec. 31) placed the population at 2,079,841; while an estimate made by the Chicago Bureau of Statistics on the same date showed a population of 2,396,541 and in 1910 it was 2,185,283. Two-thirds of the inhabitants are natives of the United States; and the remaining third foreign-born.

*Topography.*—The city has a maximum length, north and south, of 26 miles; a maximum width, east and west, of 15 miles; and covers a total area of 190.6 sq. m. Its frontage along the curving lake shore is 22 m. Previous to 1889, July 15, the territory of Chicago was but 47 sq. m. Recent additions have extended the area of the city so that it is now second in area only to the Greater New York among the cities of the Western Hemisphere.

The original site, covering about three-eighths of a sq. m., now included in the heart of the business portion, was the flat prairie land around the mouth of the Chicago river. The elevation proved too low for adequate drainage of the growing town, and the grade was raised seven feet, streets and buildings being brought to the new

level. From this business portion, now lying about 14 ft. above the lake, the land rises in an inclined plane, reaching at the west a height of 28 ft., and affording slow but adequate drainage. Except at the extreme north, the surface is but little diversified by nature. On the South Side, a morainic ridge, of moderate height, the result of former glacial action, traverses the city in a north and south direction.

Chicago has within its limits two navigable rivers—the Calumet river at the extreme south, flowing from a small lake of the same name, and the Chicago river extending through the most populous portions of the city—which, with their branches and slips, together afford over 40 miles of dockage. The Chicago river, by means of skilful engineering which reversed its original direction of flow, receives its main supply from, and is cleansed by, the waters of the lake. Southward from its mouth extends a splendid artificial harbor protected by the 'government pier.' An exterior breakwater 5,436 ft. long, stretches northeast and southwest about one mile from shore, while piers and breakwaters built as continuations of the shore of the Chicago river, form a harbor of about 455 acres, with an average depth of 16 ft. The Federal Government has also improved the Calumet river, constructing expensive piers which afford a safe and capacious outer harbor off the southern portion of the city.

The city is naturally divided by the Chicago river and its branches into three parts, known legally as the North, South, and West Divisions, but popularly called the North Side, the South Side, and the West Side. The North Side, north of the main river, lies between the North branch and the lake shore, which are nearly parallel, and, during the greater part of the city's history, has been considered to contain the most noteworthy residences. The West Side, lying to the west of the two branches, is a region of enormous manufacturing and lumber interests, containing also many beautiful residence sections. The section of Chicago in which the most important business interests are concentrated—including the densely congested district known as 'The Loop,' lying within a loop of the elevated railway—is the section bounded on the east by the lake, on the north by the river, and on the west by that portion of the South branch which flows due north—a district of less than a sq. m., but surpassed by few (if any) equal portions of any other cities of the world in the enormous volume of business transacted. Southward of this section, widening toward the south and west, extends the South Side, which, in addition to many beautiful sections largely given to residences, embraces the great Union Stock Yards, the important manufacturing centres of South Chicago (including the vast steel plant of the Illinois Steel Company) and Pullman (including the works of the Pullman Palace Car Company), and many other sections of rapidly expanding commercial and manufacturing interest.

## CHICAGO.

Chicago has a mean altitude of 603 ft. above sea-level. Its climate, tempered by proximity to the lake, is more equable than the average of its immediately tributary territory, being several degrees warmer in winter and cooler in summer, and, though somewhat trying to those inclined to pulmonary trouble, is in general bracing and healthful. In a period of 34 years the highest recorded temperature (in 1901) was 103° above zero; and the lowest (in 1872) 23° below zero, the mean temperature ranging from 23.5 degrees above zero, for February, to 72.3 degrees above zero, for July. The average annual precipitation is 33.4 inches. From the frequency of breezes blowing towards or off the lake, the city is sometimes spoken of as the 'Windy City.' The death rate in Chicago, as shown by census returns in 1900, averages 16.2 per thousand of population, which is lower than that of any other great city in the world.

*Parks and Boulevards.*—The entire area of the parks of the city is about 3,200 acres. The larger parks are connected by spacious boulevards 200 feet wide, aggregating about 50 miles in length, traversing the most beautiful sections of the city, and, with their extensions, especially along the lake shore, giving Chicago the finest and most extensive driveways in the country. Upon the lake shore at the south is Jackson Park (524 acres), famous as the site of the Columbian Exposition of 1893. About 1 mile west of Jackson Park, and connected with it by the Midway Plaisance (80 acres), lies Washington Park (371 acres). From these a boulevard runs more than 4 miles west, then more than four miles north, to Douglas Park (181.9 acres), at a less distance to the northwest of which is Garfield Park (187.5 acres). Two miles north of the last-named tract, and lying in the northwest part of the city, is Humboldt Park (205.8 acres). From Humboldt Park, a boulevard of the same name runs north and northeast, connecting with Diversey Boulevard extending due east to Lincoln Park, a tract of 513.8 acres in the North Side, lying on the lake shore. From Lincoln Park, the North Shore Drive runs northward, connecting with Sheridan Road, an extension of the boulevard system affording a superb driveway running north along the lake shore to Fort Sheridan, 25 miles distant. Grant Park, on the lake front opposite the very heart of the city, is a tract of 211 acres, including a large area reclaimed from the waters of the lake. The work of filling in is still (1907) in progress. This park, when completed, will be connected by boulevard links with the driveway system on both the North and the South Sides. It contains the permanent site of the Field Columbian Museum, now occupying the Fine Arts Building of the World's Fair of 1893 in Jackson Park.

This system of parks and boulevards, practically encircling the city, breaks the natural monotony of its topography and compensates to a great extent for its natural lack of beauty. Since all the boulevards, as well as the roads in the parks, are kept free from traffic and

1. University of Chicago.
2. Lake Drive Lincoln Park.

maintained in admirable condition, the facilities for pleasure riding and driving are unusual, if not unexcelled. As a result, Chicago abounds in horses kept for pleasure and in fine equipages, and is a paradise for devotees of the bicycle and the automobile.

In addition to the large parks connected by boulevards, Chicago contains an unusual number of smaller parks scattered throughout the various residence sections and even the manufacturing districts, especially on the South and West Sides. These parks not only add greatly to the outward attractiveness of the sections in which they are located, but afford playgrounds and breathing spaces within almost immediate reach of all citizens. Inasmuch as these small parks are improved and kept up to the standard of perfection of the older and larger parks, their influence upon the life and social conditions of the masses is one that cannot be measured by any material standards. The city also maintains free public baths at more than 12 different points, one of these, opened in January, 1894, being the first free public bath in the United States, if not in the world.

The parks and the boulevards immediately connected therewith are not included in the city Street Department, but are under the care of boards of commissioners of parks, and are maintained by special taxation. In 1906, the tax levy for parks in Chicago amounted to $3,467,704.30, including about $2,000,000 for the purchase of park sites on the South and West Sides. Of the cemeteries, among the most attractive are Graceland, Rose Hill, and Calvary, on the North Side; Mt. Greenwood, Mt. Hope, Mt. Olivet, and Oakwoods, on the South Side; and Forest Home, Elm Lawn, and Oak Hill, on the West Side.

*Suburbs.*—The topography of the region is such that there is no limit to the expansion of the city, except on the side toward the lake. The result has been that, with the rapid increase of population and the improvement of railway communications, large areas of the surrounding country have been subdivided and devoted to suburban residences. The growth of the city has gradually included many of these sections within its limits, while others, although their population is not reckoned to Chicago by the census, greatly augment its importance as a centre. Suburban expansion has been promoted by the improved rapid transit accommodation afforded by elevated and electric street railways connecting the outlying districts with the business portions of the city. On the north, the electric railway reaches to Milwaukee, Wisconsin, 85 miles distant; and on the west and southwest, an electric line connects Chicago with Aurora, Elgin, and other points in the valley of the Fox river. Along the lake shore at the north are many picturesque and rapidly growing suburban towns. Evanston, located just beyond the city limits, is the seat of Northwestern University. Wilmette, Winnetka, Glencoe, Highland Park, and Lake Forest are beautiful residential suburbs, the last-named,

lying 18 miles beyond Evanston, being the seat of Lake Forest University. Lake Bluff, a few miles north of Lake Forest, has been selected by the United States Government as the site of a new naval training station.

On the South Side the townships of Lake and Hyde Park, now included within the city, contain several flourishing suburbs. One of the most notable of these is the model city of Pullman, created in an almost incredibly short time (at the beginning of 1880 it was uninhabited prairie) by the Pullman Palace Car Company, with the intention of bringing into existence a manufacturing city which, while giving adequate facilities for their own works, should also afford, to their own and other working-people, healthful and attractive homes amid surroundings tasteful and conducive to social well-being. All the buildings are of brick; the factories are of attractive appearance, and the landscape-gardening is highly skilful. Pullman is about 13 miles from the centre of Chicago, and lies near Lake Calumet. On the same side lies South Chicago, the seat of extensive steel works. Morgan Park and Blue Island lie just beyond the city limits on the southwest; while to the southeast, the suburbs of the city may be said to include the important manufacturing centre of Hammond, Indiana, and a few miles to the east, the new model city of Gary, Indiana, built by the Indiana Steel Company on the marshes and sand dunes at the southern end of Lake Michigan, at a cost of $75,000,000, to serve the purposes of a lake port and steel manufacturing centre in direct communication with the ore-producing regions of Lake Superior. The shores of Lake Michigan, both east and west, abound in summer resorts within easy reach of Chicago, while many convenient and well-patronized resorts are also found on the interior lakes and rivers which are abundant in Illinois, Wisconsin, and Indiana.

*Municipal Improvements.*—In respect of municipal improvements, Chicago ranks among the most progressive cities of the world. These improvements have kept pace with the advances that have been made territorially, industrially, and commercially, since the great fire of 1871. In addition to the boulevards, already mentioned, there are 2,835 miles of streets, of which 1,421 are paved; and 1,392 miles of alleys, of which 123.5 miles are paved—the combined length of the streets and alleys, in 1907, being over 4,226 miles. The principal business streets run north and south, especially in the central section of the city. The plan of arrangement in regular squares (the 'checker-board' plan) prevails generally throughout the city. The problem of rapid transit growing out of the city's increase in population is solved by the abundant facilities afforded by elevated and surface electric street railways and by suburban service on the steam-operated railroads entering and leaving the city. The surface cars early proved entirely inadequate, and in 1892 an elevated road was built on the West Side. In the following year

another elevated road was constructed, connecting the World's Fair grounds on the south with the heart of the city. Later extensions have carried the elevated system well toward the limits of the thickly built-up sections of the North, South, and West sides. For many years, several of the surface lines were operated by cable; but this has been supplanted in favor of the universal use of electricity as the motive power on both elevated and surface lines, which together operate over 1,350 miles of track within the city limits. Under the business portion of the city, at a safe depth below the streets, has been constructed by a chartered private company a vast system of tunnels ramifying in all directions, with projected extensions reaching far toward the city limits at the north and south. These tunnels consist of concreted bores, large enough to accommodate low cars drawn by electric engines and loaded with such freight as will pass through the doors of standard freight cars on the steam roads. At intervals, larger bores have been made, which may possibly serve at some future time as cross-town links for the steam trunk lines, none of which yet traverses the city. The purpose of this tunnel system is to provide conduits for telephone and telegraph cable lines, and a rapid electric railroad service for the transfer and delivery of freight, thus relieving the congestion of traffic on the streets above. Connections are made with the sub-basements of many of the large stores and office buildings for this purpose.

The Chicago river and its branches are spanned by numerous bridges, several being of the bascule or 'roller lift' type. To increase the facilities of uninterrupted communication, three tunnels were built under the river. The Washington street tunnel, 1,605 ft. long, was built in 1867–69 at a cost of $517,000. It connects the South and West Sides, as does also the Van Buren street tunnel, 1,514 ft. long, built in 1891–92 at a cost of $1,000,000. The La Salle street tunnel, 1,890 ft. long, connecting the North and South Sides, was built in 1869–71 at a cost of $566,000. All three tunnels are used for street cars. The work of lowering the tunnels to prevent obstruction to navigation of the Chicago river by deep-draught vessels, was begun in 1906.

The system by which Chicago is supplied with water is a remarkable one, and one in which much engineering skill was employed. The water is obtained from the bottom of Lake Michigan. Of the two systems of water-works, the buildings of the one first completed are in the North Division, near the lake shore. They consist chiefly of a stone water-tower, 175 ft. high, up which the water is forced by engines having a total pumping capacity of 100,000,000 gallons daily, and from which the water is distributed. From this tower a cylindrical tunnel of masonry, 5 ft. in diameter, extends three miles under the lake, from which it receives its supply through a grated cylinder inclosed in an immense crib. As the city grew,

it was found that the water supply became inadequate, and in order to reach a point in the lake where the water would be uncontaminated by sewage, extra cribs were built 2 to 4 miles out, with a 7-ft. tunnel connecting them with the shore. In 1907 there were 5 distinct lake and land tunnel systems supplying the city. Their total length was over 38 miles; and their combined daily capacity of supply 615,000,000 gallons. A new tunnel is under construction to provide a supply adequate to meet the rapidly growing needs of the southernmost portions of the city. Chicago has over 1,800 miles of mains, and its average daily consumption of water is estimated at over 147,000,000 gallons. In 1906, Jan. 1, there were 1,673 miles of sewers. The city is lighted, chiefly by electricity and gas, at an annual cost of about $960,000. Gas is supplied by private companies; but the city owns electric-lighting plants, at which the greater part of the current used for lighting purposes is generated. A few electric lights are rented, and some gasoline lights are also used. The Fire Department is one of the finest, numbering 1,615 members in 1906, and costing about $1,900,000. A police force of over 4,000 men is maintained, at an annual cost of over $3,825,000.

*Sanitary District and Drainage Canal.*—Inasmuch as Lake Michigan is the source of Chicago's water-supply and the natural reservoir of its sewage, which was discharged into it directly, as well as through the Chicago river, the enormous expansion of the city created a complicated problem in sanitation. In order to provide against further pollution of the waters of the lake, the people of the city succeeded in 1889 in having a bill passed by the Illinois legislature creating the Sanitary District, and authorizing its board of trustees to take preventive measures by construction of a Drainage Canal connecting the Chicago river with the Des Plaines river, a tributary of the Illinois river, which empties into the Mississippi. The Sanitary District was organized 1890, Jan. 18; the work of digging the canal began 1892, Sept. 3, and in 1900, Jan. 2, water was turned into the channel, which was completed 28.05 miles to Lockport. The minimum depth of the canal is 22 ft., its width at the bottom ranging from 110 ft. to 202 ft., and at the water-line from 162 ft. to 200 ft. The channel is cut partly through glacial drift, partly through rock. As the plans provided that the canal should follow the bed of the Des Plaines river, a diversion channel for that stream had to be excavated, paralleling the canal for 13 miles, and provided at its head with a spillway to direct the surplus flood waters toward Chicago. This spillway, however, will be dispensed with, and, in order to prevent overflow in Joliet, the deep waterway will be extended from its terminus above that city to a point below it. The material excavated in the construction of the Drainage Canal aggregates 48,478,659 cubic yards, including 13,168,659 cubic yards of solid rock, making this canal the largest artificial water-

way ever constructed. Its total length is 32 miles, forming practically an extension of Chicago harbor capable of accommodating the largest lake boats. It runs through an extremely rich farming country, and at points cuts through inexhaustible stone deposits. The Sanitary District owns 5,500 acres of land abutting on the canal on both sides, varying from 270 to 2,000 ft. in depth back from the water, suitable for industrial purposes, accessible to 26 railroads and by water to the markets of the world.

Within this area, the Corn Products Refining Company has already located a $5,000,000 plant at Summit, 8 miles from Chicago. The District has spent $4,000,000 in the erection of an electric power plant at Lockport, supplying 15,000 horse-power to Chicago and other points along the canal, with an ultimate capacity of 30,000 horse-power. The excavated stone piled along the banks of the channel has a market value, crushed and delivered for concreting, paving, etc., of over $30,000,000, and is to be utilized.

Already about $50,000,000 has been spent on this project. The tax levy in Chicago for Sanitary District purposes in 1906 was $2,024,750.65; in 1905, $2,957,939.28. Further plans include the straightening of the north branch of the Chicago river, and its connection with Lake Michigan at Wilmette by means of the 'Evanston Channel,' 8 miles long, to flow through the suburb of that name and afford a drainage outlet for the North Shore. Also, if permission of the Federal Government can be obtained, the purification of the Calumet region at the south end of the city is to be effected through reversing the flow of the Calumet river by the construction of a ship canal about 15 miles long, connecting the Calumet river at Blue Island with the Drainage Canal at Sag, Illinois.

With the opening of the Drainage Canal in 1900, the direction of flow of the Chicago river was permanently reversed. A system of intercepting sewers running north and south near the lake shore prevents egress of sewage toward the lake, carrying it to points where it is pumped to a higher level and allowed to flow by gravity westward into the new outlet, which is now directly flushed by the waters of the lake, conveying the sewage through the South Branch of the Chicago river and the artificial channel, into the Des Plaines river, emptying thence into the Illinois river, and finally flowing into the Mississippi river above the city of St. Louis. Some flooding of lowlands has occurred along the valleys of the Des Plaines and the Illinois, resulting in damage suits; but careful bacteriological and chemical tests have shown that the dilution and purification of sewage is amply sufficient to remove all menace to public health in the towns along the water outlet; and the courts have upheld the right of the Sanitary District and the people of Chicago to use the waters of Lake Michigan for this purpose. With the improvement of the Des Plaines and Illinois rivers, the Drainage Canal holds out the prospect of future serviceability as a ship canal connecting the Great Lakes with the Mississippi and the Gulf of Mexico.

## CHICAGO.

*Public and Important Buildings.*—Chicago is remarkable for the number and size of its buildings devoted to public and business uses, and for the completeness of their interior appointments. The new Cook County Building, completed in 1907 at a cost of $5,000,000, is a magnificent structure 380 ft. long, 160 ft. wide, and 204 ft. high, containing 11 stories, with a sub-basement connecting with the subway tunnel system underlying the business portions of the city. The exterior walls are of gray Vermont granite, with spandrel sections of green terra-cotta, adorned with massive Corinthian columns 94 ft. high and 9 ft. in diameter. A similar structure will replace the present City Hall adjoining. These two structures are located in the central business part of the city, and are commonly used as a starting-point in noting distances. The new United States Custom-House and Post Office building, erected at a cost of $4,000,000, occupies a whole block, its central domed tower rising to a height of 250 feet.

Chicago is the original home of the skeleton steel-frame structure and the 'skyscraper.' This new method of construction, devised by a Chicago architect, Mr. Jenney, was first applied in the erection of the Home Insurance Building. It became a model which soon attracted a world-wide attention and following. The Auditorium, 10 stories high, with a tower 270 ft. high, cost $2,000,000; it contains one of the largest theatres and opera houses in the world, seating over 4,000 people, a great hotel with 400 guest rooms, and 136 offices and stores, and has an Annex of similar proportions. The Masonic Temple, 21 stories, is 285 ft. high—the tallest building in Chicago—and cost $3,500,000. Other large office structures include the Title and Trust (16 stories), New York Life (13 stories), National Life, First National Bank, Tribune, Marquette, Old Colony, Fisher, Columbus Memorial, Fine Arts, Rookery, Woman's Temple, Stock Exchange, and Railway Exchange buildings. Among the important buildings should be mentioned the Art Institute in Grant Park, ranking among the finest art museums in the country; the Chicago Public Library, costing $2,000,000; the Board of Trade; Chamber of Commerce; Y. M. C. A.; Newberry Library; Field Columbian Museum; and numbers of handsome clubs, halls, stores, and theatres, besides many elegant and costly private homes. Some of the theatres are architecturally handsome, the most prominent being the Auditorium, Chicago Opera House, Garrick, Grand Opera House, Great Northern, Illinois, Majestic, McVicker's, Olympic, Power's, Studebaker, Whitney, and Colonial (formerly the Iroquois). White City (built after the model of similar resorts at Coney Island, New York) and Sans Souci Park are also prominent places of amusement. Among the more than 60 hospitals, the principal are the Cook County Hospital, accommodating 1,000 patients, and the Chicago, Englewood Union, Hahnemann, Mercy, Michael Reese, Presbyterian, Alexian Brothers, St. Luke's, St. Bernard's.

and Wesley hospitals, besides the United States Marine Hospital, one of the largest and most costly in the country, located at Lake View, north of Lincoln Park.

The city contains handsome monuments of Abraham Lincoln and General Grant in Lincoln Park; and the tomb, monument, and bronze statue of Stephen A. Douglas, United States senator from Illinois 1847–61, erected by popular subscription, near the lake shore. The monument is a tall column supporting the statue. Monuments to many other historical characters adorn the various parks.

Both in the humble quarters and in the magnificent avenues, detached houses are the rule, which gives a pleasing and home-like effect; in few large cities are the houses in so large proportion owned by their occupants, and occupied by but a single family.

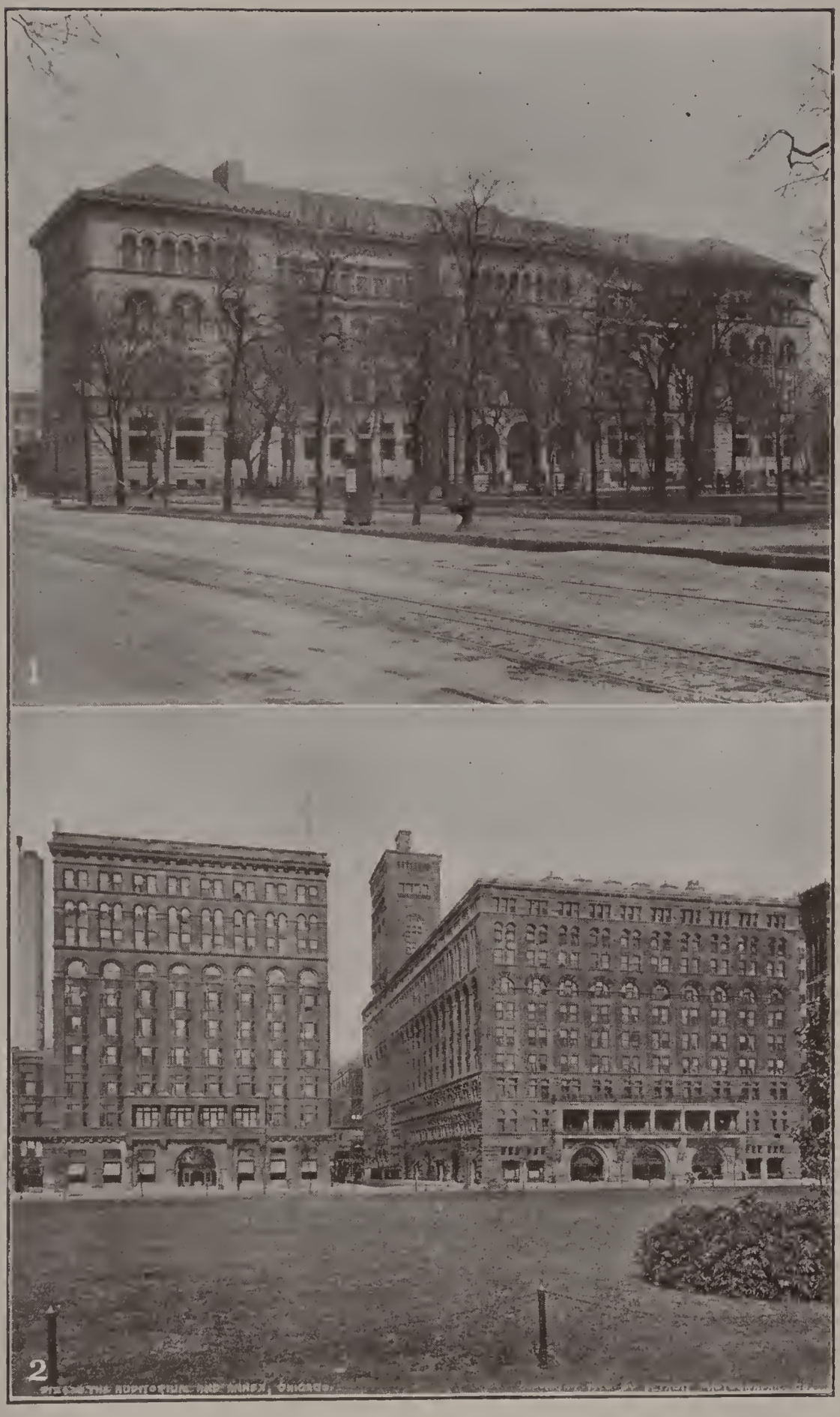
*Communications.*—Except in winter, when navigation is impeded, Chicago is accessible to the Atlantic seaboard through the waterways of the Great Lakes, the Erie Canal, and the canals of the St. Lawrence route. Communication with the Mississippi river is also open for light-draught vessels through the Illinois and Michigan Canal, 102 m. long, connecting Lake Michigan, through the south branch of the Chicago river, with the Illinois river at La Salle.

Chicago is one of the greatest railroad centres of the western continent. No fewer than 23 railways enter the city; and from its 6 terminal stations, an average of nearly 1,600 passenger trains arrive and depart daily. The systems controlled by several of these roads include a mileage of from 1,000 to 3,000 miles each. Communication with the East is maintained by 6 great lines—the Lake Shore and Michigan Southern Railway, connecting with the New York Central system; the Pittsburg, Fort Wayne, and Chicago Railway connecting with the Pennsylvania Railroad Company's system; the Michigan Central, connecting with the Grand Trunk system; the Wabash, connecting with the Canadian Pacific system; the Baltimore and Ohio; and the Erie. Southeast extend the Cleveland, Cincinnati, Chicago and St. Louis (the 'Big Four'), with its connections; the New York, Chicago and St. Louis; and the Chicago and Eastern Illinois and Chicago and Western Indiana. Into southern Illinois extends the Illinois Central, with lines reaching to the Gulf of Mexico. Five great lines connect Chicago with Missouri and Iowa, and enable it to drain the fertile regions of western Illinois, Iowa, Missouri, and the States to the West and southwest of them; these are the Illinois Central, the Chicago and Alton, the Chicago, Burlington and Quincy, the Chicago, Rock Island, and Pacific, and the Atchison, Topeka and Santa Fé. North and northwest from Chicago stretch the great systems of the Chicago and Northwestern and the Chicago, Milwaukee and St. Paul, connecting with lines that ramify throughout the great Northwest to the Pacific Coast and northward across the international boundary into the great fertile belt of the Canadian Northwest.

The railroads in general run far into the city, which includes within its limits nearly 1,600 miles of trackage for steam roads. With the exception of the lowered and walled-in tracks of the Illinois Central along the lake front, where there are no street crossings, all of this trackage is being elevated; when this work is completed, there will not be a single railroad street-crossing at grade level within the city limits. In 1907, one-half of the trackage—about 800 miles—had been elevated at a total cost of about $50,000,000, involving the construction of about 600 subways. Grade crossings in the city formerly numbered about 3,000, and fatal accidents were of very frequent occurrence; but by diversion of streets in the work of elevation. the number of crossings will be reduced to about 1,100 In this work, Chicago is unique among American cities, inasmuch as the construction of this great public improvement and safeguard is being carried out at the expense of the railroads themselves, without any cost to the people of the city.

*Trade and Commerce.*—The trade of Chicago is enormous, the chief items being live stock and meat products, grain, and lumber. The grain elevators have an aggregate storage capacity of 50,000,000 bushels; and in 1906 the grain receipts amounted to 240,065,226 bushels, and shipments to 177,937,972 bushels. The packing industry takes front rank. The first packing house was established in 1832; now over 13,000,000 head of cattle, hogs, and sheep are killed and packed annually, a year's shipments of packed meat products amounting to about 2,500,000,000 lbs. This vast industry is concentrated at the Union Stock Yards, embracing about 320 acres, and at adjacent establishments. In the lumber business, there is handled annually nearly 2,000,000,000 feet; while transactions in coal, hides, wool, cheese, butter, and all commodities used by the people of the nation at large, stamp Chicago as one of the foremost industrial and commercial centres of the world. Its manufactured products in 1905 amounted in value to $955,036,277. The volume of its external commerce is shown in the fact that it requires the combined service of 23 railroad systems and a fleet of lake vessels whose entrances and clearances in 1906 numbered over 14,000, with a tonnage of more than 15,000,000. The commerce of the city with foreign countries amounts to over $20,000,000 annually, about two-thirds being imports.

Being situated between a vast region of pine forests and the prairie regions of the Northwest, it was inevitable that Chicago should become one of the greatest distributing points for lumber. The western half of Michigan, the northern peninsula of the same State, and the Green Bay district of eastern Wisconsin afford enormous supplies of white pine lumber, an indispensable requisite to the development of the West. Most of these regions are accessible to Lake Michigan, upon which, accordingly, great numbers of vessels transport the sawed lumber to



1. Newberry Library.

2. Auditorium and Annex.

Chicago, which annually receives more than 1,500,000,000 feet of white pine lumber. In 1900 the trade amounted to a total of 2,363,819,000 feet. It is estimated that $100,000,000 are employed in the lumber business there. The principal location of the lumber yards is along the South branch of the river, in the southwest part of the city, and in South Chicago on the Calumet river. The trade is regulated by the lumbermen's exchange.

Supplemental to its importance as a great lumber centre, Chicago has developed extensive allied industries, the value of the manufactures of furniture alone amounting annually to nearly $12,400,000, and the products of the planing and lumber mills to over $7,500,000.

In 1907, Chicago had over 100 banking institutions, including 16 national banks in operation, with a total capital of $27,850,000, deposits aggregating $323,295,421, 1906, Dec. 31; surplus and profits amounting 1907, May 20, to $24,476,589.62, and resources of $405,288,583, besides 40 State banks with a total capital of $30,100,000, deposits 1906, Dec. 31, of $354,744,982, surplus and profits 1907, May 20, of $25,691,897.42, and resources of $431,502,957.09. Clearings by the associated banks of the city in 1906 aggregated $11,047,311,894.50, with balances amounting to $735,239,699.40; while clearings by the clearing-house of the Chicago Board of Trade the same year were $56,794,345.50, with balances of $16,784,093.18.

Chicago is the sole port of entry in the State of Illinois, though there are two customs districts, and is the entrepôt of all the foreign commerce of the State. In 1906 the value of imported goods warehoused at Chicago was $6,295,598, of which $1,792,620 worth remained in warehouse at the end of the year. Duties collected on imports in 1906 amounted to $10,005,986.87; and internal revenue collections to $7,455,774.28.

*Manufactures.*—At the last federal census (1900), there were in Chicago 19,203 manufacturing establishments, representing a capital invested of $534,000,689, giving employment to 262,621 persons, and distributing annually in wages $131,065,337. The raw materials used cost $583,401,562, and the finished products aggregated in value $888,786,311. By 1905 the output of the manufactories had increased to $955,036,277. The principal industries, according to the value of the products in the census year, were: Wholesale slaughtering and meat-packing ($248,811,997); foundry and machine shop products ($44,561,071); men's clothing, factory ($36,094,310); iron and steel ($31,461,174); agricultural implements ($24,848,649); railroad cars ($19,108,095); printing and publishing ($18,536,364); masonry ($15,954,527); malt liquors ($14,956,865). Among other important manufactures were: Bakery products, coffee and spices, furniture, electrical supplies, women's clothing, soap and candles, wholesale slaughtering (without packing), linseed oil, planing mill products, and confectionery.

## CHICAGO.

*Government.*—The municipal government of Chicago consists of a mayor and a common council, with departments of law, finance, public works, police, fire, health, electricity, building, supplies, inspection, and track elevation; also departments of the city clerk, treasurer, collector, and sealer; a board of local improvements, a board of civil service commissioners, and a board of education. The city council, of which the mayor is the presiding officer, consists of 70 aldermen, 2 for each of the 35 wards, who are elected, one for each ward each year, for a term of 2 years. The mayor is elected for 4 years at an annual salary of $18,000. A two-thirds majority of the aldermen is required to override his veto. With the approval of the city council, he appoints the heads of all departments; but the city clerk and the city treasurer are elected for two-year terms, the former at a yearly salary of $5,000; the latter, $12,000.

In common with other large cities Chicago has experienced a wave of civic reform. A civil-service law, enacted largely through the efforts of the Civic Federation, has in a large measure taken the control of city employees out of the hands of politicians, and made appointments, advancements, and removals dependent upon merit.

In 1902 a movement was started looking to the securing of a new charter for the city, by delegates representing the Civic Federation, the city council, the Chicago Bar Association, the Board of Trade, and other representative organizations. As a result, changes in the old charter were embodied in amendments to the State constitution, which passed the Illinois legislature in April, 1903, and were ratified by the people of Illinois at the general election in November, 1904. The validity of the charter amendments and the constitutionality of the acts passed in accordance therewith by the State legislature in 1905, were upheld by decision of the State Supreme Court, 1906, Feb. 15. The most important of these acts were those extending the mayor's term of office to 4 years and making other changes as to municipal officers, regulating the price of gas and electricity, and increasing the facilities for the administration of justice by establishing the 'Municipal Court of Chicago,' with 28 judges, dividing the city into 5 court districts with branch courts, and exercising a wide jurisdiction in civil and criminal cases, intended to relieve the frequent congestion of the higher Circuit, Superior, and Criminal courts, and to insure a more efficient system of judicial administration. A convention to effect further changes in the city charter was organized late in 1905.

*City Finances.*—The expenses of the city are covered by direct taxes on real estate, personal property, capital stock, and railroad property, and by various licenses. Altogether 11 boards make annual levies, as follows: State tax, county tax, city tax, school tax, library tax, Sanitary District, and the commissioners of the south and west park systems, Lincoln Park, Ridge Park, and North

shore park district, the last two named controlling small park districts on the North Side. The assessed valuation of property for tax purposes, as assessed by the board of assessors, then reviewed by the board of review, and finally equalized by the State board of equalization, is 20 per cent of the assessed actual valuation, and in 1906 amounted as follows: real estate, $303,033,228; personal property, $89,370,292; capital stock, $11,882,451; railroad property, $21,977,325—a total of $426,263,296.

The average rate of taxation in 1906 was $66.6746 per $1,000 of assessed valuation; and the taxes levied amounted to $28,451,436.78, including $6,798,899.57 for schools, and $2,672,670.86 for school buildings; $277,071.14 for the Chicago Public Library; $2,131,316.48 State tax; $3,346,166.87 county tax; $2,024,750.65 Sanitary District; and $3,467,704.30 for parks. The ordinary expenditures of the city average about $15,000,000 annually, some of the chief items in 1905 being as follows: General government, $2,496,499.50; police department, $3,829,569.44; fire department, $1,882,483.32; bureau of streets, $1,527,383.52; waterworks, $1,914,488.41. Extraordinary expenditures in 1905 aggregated $3,198,898.34, including $2,714,033.20 for public works. The total bonded debt of the city, 1906, Dec. 31, amounted to $25,555,000, including $4,293,000 of World's Fair bonds still outstanding. Annual interest on the bonded debt amounts to $1,012,147.50, the rate ranging from 3½ to 5 per cent.

*Educational, Religious, and Charitable Institutions.*—Chicago has a carefully planned system of public school education, in which a progressive spirit prevails. In 1832 the first school was opened with 12 pupils. In 1906 there were 18 high schools, with 13,669 pupils, and 235 elementary schools, with a total enrollment of 287,113, besides a Normal School, schools for the deaf and for crippled children, a parental school, and schools for apprentices. Total expenditures for school purposes in 1906 were $11,126,585.54, including $3,645,691.81 for buildings. In the elementary schools, boys in the two highest grades are taught manual training, and girls domestic science—cooking and sewing. German is an elective in the grammar grades.

Institutions for higher education include the University of Chicago (see CHICAGO, UNIVERSITY OF), St. Ignatius College (R. C., opened in 1869); Northwestern University (M. E.), at Evanston, whose professional schools (except Garrett Biblical Institute) are in Chicago; Lake Forest University (Presbyterian); and a large number of private secondary schools, including Armour Institute of Technology, Lewis Institute, Seminary of the Sacred Heart, De La Salle Institute, University School, Harvard School, Kirkland School, St. Xavier's Academy, and Kenwood Institute. Theological seminaries are the Chicago (Congregational), Chicago Lutheran, McCormick (Presbyterian), and Western (Protestant Episcopal). Medical schools include the College of Physicians and Surgeons;

Rush (University of Chicago); Northwestern University; Homœopathic; Hahnemann; Bennett; and Harvey. There are also several schools of law, dental colleges, schools of pharmacy, training schools for nurses, veterinary colleges, art schools, and schools of music. The American School of Correspondence, housed in a magnificent building of its own, is the largest institution of its kind in the world exclusively devoted to correspondence instruction along technical lines. Northwestern University, opened in 1855, with an endowment of $200,000, now owns property valued at $8,650,759.85, and had an enrollment in 1906–7 of 3,662 students. Lake Forest University, chartered in 1857 as Lind University, has an endowment of $575,000, and owns property valued at $785,000, its students numbering 398. Lewis Institute, founded on bequest of A. C. Lewis, who died in 1877, October 25, and opened in 1896 as a polytechnic school for both sexes, has an endowment fund of $1,000,000, owns property costing over $750,000, and has about 2,500 students. Armour Institute of Technology, founded in 1892 by Philip D. Armour, ranks among the foremost technical schools in the country, its enrollment in 1906–7 being 1,869. The art school of the Art Institute is self-supporting, offering very complete courses at small cost ($5 to $25 for a term of 12 weeks).

Chicago has 3 great libraries besides those of its educational institutions, of the Chicago Academy of Sciences, and of the Field Columbian Museum. The Public Library, founded in 1872, contained in 1906 over 328,000 volumes; it has one of the largest circulations in the country, and maintains 50 or more delivery stations. The Newberry Library, with 221,500 volumes and pamphlets, is a reference library with especially fine collections on music, medicine, and religion. The John Crerar Library, endowed with $2,500,000, has 247,500 volumes and pamphlets, including notably valuable collections on natural, physical, and social science. The Library of the Chicago Historical Society has a fine collection of Americana.

The city contains over 800 churches; prominent among these are the Catholic Cathedral of the Holy Name, the Cathedral of Saint Peter and Saint Paul (Protestant Episcopal); the Catholic Church of the Holy Family, pure Gothic in style and noted for its handsome interior; Grace Church (Protestant Episcopal), a handsome stone edifice with open timber roof and richly decorated interior; Unity Unitarian Church, a light stone structure in modern Gothic style, with double spires; the Second Baptist, the Second Presbyterian, the Union Park Congregational, St. James, Immanuel Baptist, Plymouth Congregational, and 8 Christian Science churches. Religious life is active, and observance of Sunday is usual, though places of amusement are open as on week days. There are a large number of charitable and benevolent institutions, numbering in all, with over 60 hospitals already mentioned, about 150. Among the benevolent institutions are the

Old People's Home, Newsboys' Home, Washington Home for the Reformation of Inebriates, Foundlings' Home, Home for the Friendless, and the Protestant, St. Joseph's, and St. Mary's Orphan asylums, besides many dispensaries, day nurseries, and relief societies. Armour Mission, maintained as a memorial to Joseph Armour, aims at industrial, mental, and religious training. Among the dozen or more social settlements for the improvement of the masses in the crowded and poorer districts, Hull House, under the direction of Miss Jane Addams, has attained world-wide fame; it was suggested by Toynbee Hall, London, England, and is without religious or sectarian limitations. The Chicago Bureau of Justice employs legal talent to help the poor in recovering just wage-claims; and the Chicago Bureau of Associated Charities does a worthy work, especially by means of summer camps and outings for the poor.

As the seat of many conventions, and to accommodate its great transient population, Chicago has numerous fine hotels, clubs, etc. Besides the Auditorium, already mentioned, with its Annex, the principal hotels include the Palmer House, Great Northern, Grand Pacific, Majestic, Sherman, Lexington, Victoria, Virginia, Windsor-Clifton, Saratoga, and Metropole. Among the leading clubs, many of which occupy fine buildings of their own, are the Union League, University, Hamilton, Iroquois, Chicago, Chicago Athletic Association, and the Chicago and Colonial Yacht clubs.

Chicago is second to New York only in the number of its newspapers, periodicals, and publishing enterprises.

*History.*—The name is of Indian origin, and is said to have been the name of a kind of wild onion, originally found on the shore of the lake. The first white men to visit the site of the city were the French missionaries and explorers, Marquette, Joliet, Hennepin, and La Salle, the first in 1673. In 1685 a French fort, commanded by an officer in the Canadian service, was established; and before the end of the century the Jesuits made it a mission post. Indian hostilities, however, compelled practical abandonment of the post. In 1796 there was only a single hut at the place; but in 1804 the United States Government established the frontier post of Fort Dearborn, and a trader named John Kinzie moved to the spot, the first white man of American birth to make his home there.

In the War of 1812 between the United States and Great Britain, Indians massacred the garrison, who had abandoned the fort, and the site was again deserted until the fort was rebuilt in 1816, when permanent settlement began. The village grew but slowly, there being only 7 resident families in 1830, and the total population numbering only 70 persons. In that year, however, land grants having been made by Congress for the Illinois and Michigan Canal, a town was plotted and surveyed, August 4, at the mouth of the Chicago river. In 1835, February

11, the town of Chicago was incorporated; and 1837, March 4, the first city charter was granted. The place had then an area of 10 square miles and a population of 4,000. In spite of the panic of 1837, the produce trade, by way of the lake, increased rapidly. The canal, begun in 1836, was opened to traffic in 1848. The first railroad entering the city, intended to run west to Galena, was begun in 1847. The first railroad communication with the East was established by the Michigan Southern and Michigan Central railroads, both of which reached the city in 1852. In the same decade the opening of the Illinois Central made the State tributary to Chicago. In 1850 the population was 28,269; in 1860, 109,206; in 1870, 298,977. In 1871, October 8, a fire, starting during a gale, developed into the most terrible conflagration of modern times. Originating on the West Side, the fire spread to the South Side, doing still more damage there, and then to the North Side, where it was most destructive of all. It was extinguished by rain on the morning of the 10th. The region devastated included the most important business districts. The buildings burned were 30 per cent of all those in the city, their value 50 per cent. The most important public buildings were included. The burned area amounted to 194 acres in the west division, 460 acres in the south, and 1,450 in the north, a total area of nearly $3\frac{1}{2}$ square miles. Altogether 17,450 buildings were destroyed, about 100,000 people rendered homeless, and about 300 lives were lost. The loss of property was estimated at $192,000,000. Chicago recovered from this calamity with marvelous rapidity, and has since had a career of almost uninterrupted growth and prosperity. In the rebuilding of the city, as well as through extensions of its limits, the business area, formerly confined mainly to the South Side, has been increased in all divisions, presenting an imposing collection of substantial manufacturing and commercial buildings and large numbers of stately business blocks unrivaled for size, beauty, and convenience. The value and attractiveness of the residence portions have kept pace with commercial and industrial development.

In 1860 Lincoln was nominated at the Republican National Convention held in Chicago.

In May, 1886, as a mob of anarchists were being dispersed by the police, 6 of the latter were killed by dynamite bombs, thrown by the anarchists. Numerous arrests were made, 7 anarchists were tried for murder, and 4 were hanged, 1886, November 11. In 1890, February, Congress passed a bill providing for the holding of a Worlds' Fair in commemoration of the discovery of America by Columbus 1492, at Chicago, and subsequently postponed the Fair till 1893. See COLUMBIAN EXPOSITION.

In 1903, Dec. 30, while a matinee performance of the extravaganza 'Mr. Bluebeard' was in progress at the

new Iroquois (later named the Colonial) theatre, a fire started on the stage from an unprotected light; and through failure of the asbestos curtain to work, the flames quickly spread to the auditorium. In the ensuing panic, 575 lives were lost. The audience was composed largely of children and family parties. Several of the exits were barred by locked doors, and many who were not burned or suffocated were trampled to death.

CHICAGO, UNIVERSITY OF: educational institution, of Baptist origin and under Baptist control, but undenominational in courses of study and administration. The first University of Chicago, founded 1857 on a gift of land by Hon. Stephen A. Douglas, closed for lack of funds, 1886. The present University of Chicago was founded 1891 by John D. Rockefeller, of New York, who gave $600,000 of its original endowment of $1,000,000, and contributed in all $2,600,000 before the work of instruction began. The University opened 1892, Oct. 1, with 120 instructors and 700 students. The enrollment of students in 1905–6 was 5,079, the faculty numbering 341. The campus covers 95 acres, including the entire frontage on both sides of the Midway Plaisance between Cottage Grove and Madison Avenues. It cost, up to April, 1907, $4,217,853. 12, and contains over 30 buildings erected at a cost of about $4,500,000. The architectural plan consists of quadrangles, with buildings in English Gothic style; among them are: Cobb Lecture Hall, North and South Divinity Halls, Snell Hall, Walker Museum (Geological), Beecher Hall, Nancy Foster Hall, and Kelly Hall (women's dormitories), Kent Chemical and Ryerson Physical Laboratories, Haskell Oriental Museum, Hull Biological Laboratories, Green Hall, Ellis Hall, Charles Hitchcock Hall, University Press, Leon Mandel Assembly Hall, Reynolds Club House, with University Tower, Hutchinson Commons, Bartlett Gymnasium, Emmons Blaine Hall (School of Education), Law School, Harper Memorial Library, and University Chapel.

Up to 1907, 3,000 donors had given to the University property amounting to $27,400,000.00. The largest single benefactor is Mr. Rockefeller, whose gifts have aggregated about $21,000,000. The expense of maintaining the University during the year 1906–7 was $1,322,-800.00. The astronomical observatory of the University, located at Williams Bay, Lake Geneva, Wisconsin, contains the largest refracting telescope in the world (40-in. objective), the gift of the late Charles T. Yerkes.

According to its charter, the aim of the University is to give facilities for higher education to both sexes, to erect and maintain schools of literature, law, medicine, technology, music, and the fine arts; and to confer degrees. The University is governed by a self-electing body of 21 trustees, by the President, a University council, and the University senate. The President is the executive head of the University in all its departments. The University

proper includes the graduate school of arts and literature; the Ogden (graduate) school of science; the divinity school; the schools of law, medicine, and education; the colleges of arts, literature, science, commerce and administration, and religious and social science. University College maintains evening and Saturday courses; and extension work is carried on by the Lecture-Study and Correspondence-Study departments. Summer schools in various departments are also held. Examinations are required for admission in Latin, Greek, mathematics, English, history, physics, chemistry, biology, German, and French. Of these, all but Greek, chemistry, biology, and one modern language are indispensable. Degrees A.B., Ph.B., and S.B. are given after the satisfactory completion of a range of studies covering practically a four-years' course. The degrees A.M., S.M., Ph.M. are given after a post-graduate course of 1 year and an examination; the degree Ph.D. after 3 years of post-graduate work at the University, an examination, and the submission of a printed thesis. The academic year is divided into 4 quarters, beginning on the first day of July, October, January, and April, each closing with a 'convocation' analogous to the annual 'commencement' of most universities.

The first President of the University, holding office from its foundation in 1891, until his death, 1906, Jan. 10, was William Rainey Harper, Ph.D., D.D., LL.D., formerly professor of Semitic and Biblical literature in Yale University. He was succeeded in 1907 by Harry Pratt Judson, LL.D., formerly dean of the institution.

CHICANE, n. *shĭ-kān'*, or CHICAN'ERY, n. *-ėr-ĭ* [F. *chicaner*, to wrangle or pettifog it: F. *chic* and *chique*, a little bit]: mean or unfair artifices to obscure the truth; sharp practice; trick; sophistry; wrangling: V. to use shifts or artifices. CHICA'NING, imp. CHICANED', pp. *-kand*. *Note.*—CHICANE meant originally the game of the mall; then a dispute in games, particularly in the game of the mall; and finally, sharp practice in lawsuits. In the first sense, *chicane* is represented by a mid. L. word, *zīcānum*, formed from mediæval Gr. *tzukan'ĭŏn*, a word of Byzantine origin—see Brachet—SYN. of 'chicanery': trick; stratagem; sophistry; quibble.

CHICHESTER, *chĭch'ės-tėr:* municipal (ex-parliamentary) borough and episcopal city in Sussex, England; 17½m. e.n.e. of Portsmouth. The cathedral erected in the 12th and 13th c., on the site of a wooden one founded 1108, and burned 1114, measures 410 by 227 ft., with a spire 300 ft. high. The chief trade is in agricultural produce and live-stock. There are malting, brewing, and tanning establishments. Chichester was taken and partly destroyed, 491, by the south Saxons. It was soon rebuilt by Cissa, their king, and called Cissancaster, or Cissa's Camp. It was for some time cap. of the kingdom of Sussex. Pop. 12,200.

CHICK, n. *chĭk*, or CHICK'EN, n. *-ĕn* [imitative of the

cry: Dut. *kieken:* AS. *cicen*, a chicken: compare Hung. *tyuk*, a hen]: the young of the domestic cock and hen: a child; a word of endearment. CHICKEN-HEARTED, a timid; cowardly; fearful. CHICK'LING, n. a small chick.

CHICK, v. *chĭk* [prov. Ger. *kücken;* Scot. *keek*, to peer, to look out]: in *OE.*, to germinate — applied to plants budding.

CHICKADEE, *chĭk'a-dē*, or BLACKCAP TITMOUSE (*Paru atricapillus*): bird common in many parts of N. America and different from the European blackcap. It is five to six in. long, and about eight in. wide with wings spread; colors, black, gray, and brown, touched with white on the tail and wings. It is useful in destroying canker worms and other insects, and attractive by its cheerful and familiar manners and by the peculiar note which gives its name. Since the English sparrow's advent the C. is less abundant. It shares with others the name snowbird.

CHICKAHOMINY, *chĭk-a-hŏm'i-nĭ*, BATTLES OF THE: 1862, May 31—July 1, and 1864, June 3; on Chickahominy river, e. of Richmond, Va. The Chickahominy rises about 20 m. n.w of Richmond, Va., flows s.e. 50 m., midway between the Pamunkey and the James, and parallel to them, turns s. for 20 m., and empties into the James 10 m. w. of Williamsburg, and 40 m. s.e. of Richmond. In the part of its course nearest Richmond, from Bottom's Bridge to Meadow Bridge, 15 m. n.w., it flows through a wooded swamp bordered by soft bottom lands. Its channel, 35 ft. wide and four ft. deep, is often nearly dry, but is easily filled and overflowed by rains. The spring of 1862 was rainy, and the ground hardly fit for infantry, and impassable for cavalry, artillery, and trains.—The Army of the Potomac under McClellan landed at Fortress Monroe, 1862, Mar.—Apr. 2; Richmond was its objective point. The James river was barred by the ironclad *Merrimac* (destroyed May 11), and McClellan determined to move up the peninsula, some 60 m. long and 12 m. wide, between the York and James rivers. Stopped by Confederate defenses under Magruder, he besieged Yorktown (q.v.), which was defended by J. E. Johnston with 53,000 men against the Federal 112,000. The firing was to begin May 6, but May 4 Johnston evacuated Yorktown and moved with his stores toward Richmond. The Confederate rear was attacked May 5 by Hooker, and defended by Longstreet, who, though driven from his work toward evening by Hancock, had delayed pursuit long enough to secure the escape of his trains.—McClellan, advancing slowly, came, May 20, within six miles of Richmond, and might perhaps have taken it, for it was poorly defended by 54,000 men; but he much overestimated the enemy's force, and waited for McDowell's 32,000 to join him; this had been promised by govt., but fear of Jackson in the Shenandoah valley prevented the fulfilment. May 25, he heard of 13,000 N. C. troops on his right and rear, and sent Fitz John Porter to dislodge them; this was done May 27 at Hanover Court-house (q.v.), but after

some loss they made their way to Richmond.—The battles of Seven Pines and Fair Oaks (q.v.) were fought less than a mile apart at the same time, May 31. The object of the Confederate attack was to overwhelm Keyes's and Heintzelman's corps, on the Union left, before they could succeed: this failed, and Johnston was badly wounded. June 1, the Confederates retreated. The loss to both sides was heavy, but the result was in Richmond considered a defeat, and the city, having as yet no considerable defensive works, might have fallen before a prompt attack. McClellan, however, occupied himself with building earthworks and bridges, of which by June 20 seven were completed and four nearly so. Stuart's cavalry, June 13, raided entirely around the army with the loss of but one man, and destroyed some stores at White House on the Pamunkey.—Jackson had now joined Lee, and each side meditated an attack. Richmond was ill-provisioned and in no condition to bear a siege, so McClellan must be driven away. June 25, when all his force but Porter's corps had crossed the Chickahominy, a slight engagement occured at King's school-house. June 26, an attack of A. P. Hill at Mechanicsville (q.v.) or Beaver Dam, n. of the Chickahominy, was repulsed with loss.—McClellan had now determined to change his base from the York to the James, and the troops were moved on the night of the 26th. Lee attacked Porter at Cold Harbor or Gaines' Mill (q.v.), June 27, and a Union rout was barely prevented by the brigades of French and Meagher. Yet the loss was heavier on the side of the victors, who called this the battle of the Chickahominy.—McClellan was now between the two sections of Lee's army, who had but three days' rations in a country which could afford no supplies, and he might have reached Richmond in five hours, but he continued his movement to the James. A small action ensued at Savage's Station, and a heavier one at Frazier's Farm (q.v.), or Charles City Cross Roads, both June 30, the former accompanied by an abandonment of Union works and a great destruction of stores; the latter caused a loss of near 2,000 on each side.—July 1, in a strong position at Malvern Hill (q.v.), McClellan with 90,000 men was attacked by Lee with 60,000, the divisions of A. P. Hill and Longstreet being exhausted by the previous day's fight. The Confederates were repulsed with twice the loss which they inflicted, and were again at a disadvantage, had they been pushed. But McClellan moved to Harrison's Landing, intrenched himself, and begged for reinforcements; in Aug., abandoning efforts on Richmond, he withdrew to the Potomac.—In these engagements of this last week his reported losses were 1,582 killed, 7,709 wounded, and near 6,000 missing; those of the Confederates, 3,150 killed, 15,255 wounded, and 1,000 prisoners. All this bloodshed gave no result, though meantime the fate of the Confederate capital, and with it that of the war in Va., were trembling in the balance.—1864, June 3, the second battle of Cold Harbor (see COLD HARBOR, SECOND BATTLE OF) was fought. Lee was intrenched there, and

Grant, then lieut.-gen., attacked him from the same quarter whence Jackson had marched on Porter, but was repelled with heavy loss. At this time he wrote the dispatch, 'I propose to fight it out on this line if it takes all summer.' Both armies remained on the Chickahominy till June 12, and then moved to the James. For separate battles indicated in the above outline, see the titles referred to.

CHICKAMAUGA, *chĭk-a-maw'ga*, BATTLE OF: see CHATTANOOGA, BATTLE OF.

CHICKAREE, *chĭk'a-rē:* the red, pine, or Hudson-bay squirrel (*sciurus Hudsonius*). It has a body seven to eight in. long, of mixed black, gray, and red, resembles the common squirrel of Europe (*S. vulgaris*), and is found in great abundance through the northern states. It frequents clearings and shows little fear of man, but is less easily tamed than the gray squirrel. Its flesh is esteemed for tenderness and flavor.

CHICKASAW, *chĭk'a-saw*, BAYOU or BLUFFS, BATTLE OF: north of Vicksburg, Miss., 1862, Dec. 29. This battle was brought about by Gen. Sherman in his effort to reach the rear of Vicksburg, and co-operate with Gen. Grant who was marching from Holly Springs southward on the line of the Mississippi Central Railroad. Sherman with 30,000 men on transports descended the Mississippi River, entered the Yazoo River, landed his men on its south side, Dec. 26 and 27, and marched toward Vicksburg. On the 29th, about noon, he assaulted the Confederate line of intrenchments on the Chickasaw Bluffs, overlooking the bayou held by Gen. S. D. Lee with not more than 6,000 men, and was repulsed with great loss, Sherman losing in the assault and in the preceding skirmishes 1,213 killed and wounded, and 563 missing. The Confederate loss was 177 killed and wounded, and 10 missing.

CHICKASAWS, *chĭk'a-sawz:* Indian tribe now settled in the Indian Territory, on a reservation of 6,840 sq. m., on the Red river. They believed themselves to have come from the west with the Creeks and Choctaws, guarded by a dog (which was drowned in crossing the Mississippi,) and guided by a pole which was planted at night and in the morning leaned in the direction they were to take. Thus led, they reached the n. point of what is now Miss., where De Soto found them, 1540; he wintered there, and had difficulties with them in the spring. They were said to have numbered 10,000 warriors, but in 1720 were reduced to 450, living in four adjoining towns, divided into five clans, and more or less governed by a king or *mico*. English traders had won their friendship before the French settled La., and they were always hostile to the latter, who made efforts to crush them, 1736–39. They were on good terms with Oglethorpe, and made a tariff of trade, 1765, with gov. Johnstone of w. Fla By a treaty at Hopewell, 1786, the United States govt. fixed the Ohio as their n. boundary. They had then some 1,000 warriors. They

helped the settlers against the Creeks, 1793, and remained steadily friendly. They ceded their lands n. of Miss., 1805, '16, '18, for annual payments; prior to these dates some of them had removed to the Arkansas. Those remaining in Miss., 1822, numbered 3,625, living in eight villages, and were sufficiently civilized to sell hogs and cattle and to own slaves. When the govt. desired to move all Indians across the Mississippi, they ceded by two treaties of 1832, Oct. 20, and 1834, May 24, all their remaining lands, 6,442,400 acres, for $3,646,000. They lost 500 or more by small-pox during their migration. Wishing to settle on lands of the Choctaws, whose language is the same, they agreed to form part of that nation, and paid $530,000 for a section on the Red river w. and s. of the Washita. Many of them scattered beyond this region, and a few of their more progressive men acquired large estates and became cotton-planters with many slaves. Their annuity of $60,000 was favorable to laziness, and they had no school till 1851. Dissatisfied with their political condition, they appealed to the president, and by treaty of 1855, June 22, dissolved their union with the Choctaws and gained a full title to their district. After this they made rapid progress, checked by the civil war, in which they sided with the South. Their rights, forfeited by rebellion, were restored on certain conditions by treaty of 1865, Sep.; and by another, 1866, Apr. 28, they surrendered near 7,000,000 acres at 4½ cents an acre, the money to go to their former slaves unless adopted into the tribe. Neither alternative pleased them, but they accepted the latter, 1873, Jan. 10. The nation is governed by a chief and a legislature. Their constitution secures absolute freedom of speech and worship, and gives a vote to every reliable member of the tribe. They maintain a supreme, circuit, and county courts. The principal occupation is the cultivation of corn and cotton. There are besides denominational mission schools, several boarding academies, and a number of other schools. The tribe also sends many youth to other parts of the country for higher education. The Chickasaw capital is Tishomingo. According to the census of 1900 there was on the reservation a pop. of 139,260.

CHICK'EN-POX: contagious febrile disease, chiefly of children, and bearing some resemblance to a very mild form of small-pox (q.v.). Chicken-pox is distinguished by an eruption of vesicles or blebs, which rarely become pustular or yellow, and leave only a very slight incrustation, which falls off in a few days, without any permanent mark or pit, as in small-pox. From its vesicular character, it has been called the *crystal pock*. Chicken-pox is a disease of little or no danger, the fever being often hardly perceptible, and never lasting long.

CHICKEN SNAKE: see MILK SNAKE.

CHICKERING, *chĭk'ėr-ing*, JONAS: 1798, Apr. 5—1853, Dec. 8; b. New Ipswich, N. H.: pianoforte-maker. A

blacksmith's son, he learned cabinet-making, but early developed a musical turn, and was employed, 1819, in a piano manufactory in Boston. He began business for himself, 1823, and had John Mackay for a partner 1830–41, He introduced many improvements, gained the highest reputation for his instruments, and produced in later years 2,000 annually. His large gains were freely expended in quiet beneficence. His shops were burned 1852, and he began on a five-acre lot a new building, which was completed and used by his sons.—He died in Boston.—His eldest son, Thomas E. Chickering (1824–71) was col. of the 41st Mass. vols. 1862–65.

CHICK'PEA (*Cicer*): genus of plants of the nat. ord. *Leguminosæ*, sub-ord. *Papilionaceæ*, having pinnate leaves; solitary, axillary, stalked flowers; and two-seeded pods, inflated like bladders. The common chickpea (*C. arietinum*) grows wild in the cornfields of the countries around the Mediterranean sea, and in many parts of the east. It is an annual $1\frac{1}{2}$–2 ft. high, of a stiff, upright habit, covered with glandular hairs. The seeds abound in farina, and have a slightly bitterish taste. They are about the size of common peas, curiously wrinkled, so that they have been thought to resemble a ram's (*arietis*) head. They are used as food, either boiled or roasted, and are the most common *parched pulse* of the east. They are an important article of French cookery. They have been in general use from the earliest times, and the plant is extensively cultivated in Egypt, Syria, India, the s. of Europe, etc. Its cultivation extends as far n. as the southern parts of Germany; but in the climate of Britain it is found too tender to be a profitable crop. It is the *Gram* of India, and the *Garvance* of the French, whence the English name *Caravances*. The herbage affords nutritious food for cattle, and the seeds are one of the occasional substitutes for coffee. In great summer heats, drops exude from this plant, which, on drying, leave crystals of almost pure oxalic acid.

CHICK'WEED (*Stellaria media*): one of the most common weeds of gardens and cultivated fields; a species of STITCHWORTH (q.v.). It is a native of most parts of Europe and ofAsia, appearing during the colder months even on the plains of India; an annual, with a weak procumbent stem and ovate leaves, very variable; some of the smaller varieties in dry, sunny situations sometimes puzzling young botanists, from having only five or three instead of ten stamens; but always characterized by having the stem curiously marked with a line of hairs, which at each pair of leaves changes from one side to another, and in four changes completes the circuit of the stem. The leaves of chickweed afford a fine instance of the *sleep of plants*, closing up on the young shoots at night. Chickweed is a good substitute for spinach or greens, though generally little regarded except as a troublesome weed, or gathered only by the poor to make poultices, for which it is very

useful, or for feeding cage birds which are very fond both of its leaves and seeds. A number of species of a nearly allied genus, *Cerastium* natives of Britain, also bear the name of chickweed or MOUSE-EAR CHICKWEED, and the name is occasionally given to other plants, either botanically allied, or of somewhat similar appearance.

CHICLANA, *chē-klâ'nâ:* pretty town of Andalusia, Spain, 12 m. s.e. of Cadiz. It manufactures linen, earthenware, and brandy. The mineral baths are much frequented. Pop. 12,500.

CHICOPEE, *chĭk'pē:* city of Hampden co., Mass., on the left bank of the Connecticut and at the mouth of Chicopee river, 95 m. w.s.w. of Boston and 3 m. n.w. of Springfield, with which it is connected by the Conn. River railroad; formerly known as Cabotville. It contains the villages, Chicopee Falls and Chicopee Centre, not quite 2 m. apart, both of which are supplied with water-power by the Chicopee river. The industries of Chicopee embrace cotton and knitting mills, bicycle, rifle, machinery, brass and other manufactures. Chicopee Centre is lighted by electricity and has a free public library. Both villages in 1888 were connected with Springfield by street cars. Pop. (1910) 24,401.

CHICORY, n. *chĭk'ŏr-ĭ* [F. *chicorée*—from L. *cichōrĭŭm*, chicory or endive; It. *cicoria*]; written also SUCCORY (*Cichorium*): genus of plants of the nat. ord. *Compositæ*, sub-ord. *Cichoraceæ*, distinguished by bracts in two unequal rows, the outer always reflexed, the inner latterly becoming so, a nearly naked receptacle, obovate striated achenia, and a pappus of two rows of minute scales. The species are few in number, herbaceous plants, full of milky juice, natives chiefly of the warmer temperate regions of the eastern hemisphere. CHICORACEOUS, a. *chĭk'ō-rā'shŭs*, pertaining to or having the qualities of chicory. The common chicory or SUCCORY (*C. Intybus*), is a perennial plant, growing wild in waysides, borders of fields, etc. It has a long, carrot-like root, externally of a dirty or brownish yellow color, and white within. The stem rises to the height of 2–5 ft., branching; the leaves are *runcinate*, resembling those of the dandelion; the flowers sessile, axillary, in pairs, rather large, beautiful, generally blue, more rarely pink or white. Chicory is extensively cultivated in England and on the continent of Europe for its roots. It is cultivated also for its leaves as food for cattle. The blanched leaves are sometimes used as a salad, and they are readily procured in winter by placing the roots in a box with a little earth in a cellar.—To this genus belongs also the ENDIVE (q.v.).

Chicory has been used as a substitute for coffee, or to mix with coffee, for at least a century. The roots are pulled up, washed, cut into small pieces, and dried on a kiln, which leaves a shrivelled mass not more than one-fourth the weight of the original root. It is then roasted in

heated iron cylinders, which are kept revolving as in coffee-roasting, during which it loses about 25 to 30 per cent. of its weight, and evolves at the same time a disagreeable odor, resembling burned gingerbread. An improvement to the chicory during roasting is the addition of 2 lbs. of lard or butter for every cwt. of chicory which communicates to it much of the lustre and general appearance of coffee. It is then hand-picked, to remove chips of wood, stones, etc., and is reduced to powder, and sold separately as *C. powder* or *C. coffee*, or is added to ordinary ground-coffee, and is sold as a mixture. Chicory contains a good deal of sugar, but otherwise does not serve to supply the animal economy with any useful ingredient. It gives a deep brown color to water, when an infusion is made, and hence its main use in coffee. If placed in a glass of water chicory will soon sink and stain the water brown; coffee will float for a long time and then scarcely discolor the water. Some people dislike the taste of chicory, and when largely used, it has a tendency to produce diarrhea; but many people prefer to use coffee mixed with chicory partly for its taste, but mainly for the appearance of strength which it gives to the coffee. The chicory, used as an adulteration, is itself liable to adulteration; and roasted beans, pease, carrots, parsnips, mangold-wurzel, acorns, horse-chestnuts, biscuit, oak-bark tan, logwood and mahogany dust, and even the livers of horses and bullocks, are said to be employed in its adulteration.

CHICOUTIMI, *shē-kô-tē-mē′:* county of the province of Quebec, Canada, on both sides of the Saguenay river, and extending as far w. as Lake St. John, lat. 48° n.; 23,759 sq. m. Much of the country is unsettled and rough, but there are vast pine forests, from which quantities of timber are exported to England. Pop. 17,493, nearly all Rom. Catholics of French descent. The capital, chief town, and port is Chicoutimi, on the right bank of the Saguenay, 75 m. from its mouth.

CHIDE, v. *chīd* [AS. *cidan*, to scold; Swiss, *kiden*, to resound as a bell]: to reprove by words; to scold at; to rebuke; to quarrel; to drive from or away with reproof: N. a gentle noise. CHI′DING, imp. N. in *OE.*, contention; quarrel; a shouting, clamorous noise: ADJ. brawling; sounding roughly and loudly. CHID, pt. *chĭd*, or CHODE, pt. *chōd*, quarrelled. CHIDDEN, or CHID, pp. *chĭd′n.* CHI′DINGLY, ad. *-lĭ.* CHIDER, n. *chī′dėr*, one who.—SYN. of 'chide, v.': to blame; censure; reprove; rebuke; reprehend; reprimand; reproach.

CHIEF, a. *chēf* [F. *chef;* OF. *chief*, the head or highest point—from L. *caput*, the head; It. *capo;* Ger. *kopf;* Dut. *cop*, a cap, a head]: at the head or top; highest; principal; the most eminent or distinguished; the most important; most valuable; first: N. a commander or leader; the head man of a clan, or tribe, or family, or the clan name. CHIEF′LY, ad. *-lĭ*, especially; mainly; principally; in the first place. CHIEF′LESS, a. without a leader. CHIEFTAIN,

n. *chēftĭn* [OF. *chevetaine*—from mid. L. *capĭtānus*, a captain]: a leader; the head of a clan or family; strictly the head of a branch of a clan. CHIEF'TAINCY, n. *-tĭn-sĭ*, and CHIEF'TAINSHIP, n. the government over a clan. CHIEF-JUSTICE, the principal judge of a court; presiding judge in the U. S. supreme court; also of the highest courts in nearly all the states (see JUDICIARY): in England, see JUSTICE LORD CHIEF. The chief justice of the court of common pleas, previous to 1881, was the presiding judge in the common pleas division of the high court of justice, but the office is now merged in that of the chief justice of England. The title chief justice is also generally given in the various British colonies to the heads of the different judicial establishments, as in Canada, Australia, etc. In Canada there is not only a chief justice at the head of the supreme court of the Dominion, but also chief justices in the separate provinces.—SYN. of 'chief, a.': principal; main; leading; cardinal; capital; first; paramount; prime; supreme; master; eminent; great; vital; especial; grand:—of 'chief, n.': chieftain; leader, head; commander; principal;—of 'chiefly': primarily; principally; especially; particularly.

CHIEF, in Heraldry; an ordinary formed by a horizontal line, and occupying the upper part of the escutcheon. Like the other honorable ordinaries, the chief ought properly to take up a third part of the shield; but when the other charges are numerous, the chief is frequently diminished in size.—Any object borne in the upper or chief part of the shield is said to be *in chief*, though the chief be not divided off from the rest of the field, as a separate portion.—*On a Chief:* when the object is represented on the chief divided off as above described.

CHIEL, n. *chel*, or CHIELD, n. *chēld* [Gael. *gillĕ*, a lad; AS. *cild*, a child]: in *Scot.* and *prov. Eng.*, a lad; a servant —often used as expressive of disrespect.

CHIEM-SEE, *chēm-sā:* lake of Upper Bavaria, largest in the country, about 42 m. s.e. of Munich. It is more than 1,600 ft. above the sea; length 12 m., breadth 9 m.; greatest depth 500 ft. Its shape is irregular, and its coast much indented. It has three islands; the Achen and Prien flow into it, and its surplus water is discharged by the Alz into the Inn. The Chiem-see is famous for its fish; and a small steamer which plies on it enables travellers to view its fine scenery.

CHIERI, *kē-ā-rē:* town of Piedmont, n. Italy, on the slope of a hill 9 m. s.e. of Turin. Chieri is an ancient place. By the later Romans it was called Carea. The church of St. Dominico, built 1260, has some good paintings; and that of Santa Maria della Scala, built 1405, is one of the largest Gothic structures in Piedmont. Chieri is one of the oldest manufacturing towns in Europe, its manufacture of fustians and cotton stuffs dating from 1422. Silk, cotton, and linen are still important manufactures. Pop. 9,000.

CHIETI, *kē-ā'tē:* archiepiscopal city of Italy, capital of

the province of the same name, is situated on a hill near the Pescara, about 100 m. n. of Naples. It is a well-built and flourishing place, with some imposing public edifices, including a cathedral, lyceum, and theatre; and its agreeable situation has made it the residence of numerous wealthy families. The district around is fertile and well cultivated, and in the city, the cloth and silk manufactures afford employment for a considerable number of people. A very old place, C. was built on the site of the ancient *Teate* of the Romans, many of the remains of which are still visible. In the year 1524, St. Gaetano founded here the order of the Theatines. Pop. 26,000.

CHIFF-CHAFF, *chĭf'chăf* (*Sylvia hippolais*): small species of warbler, very widely diffused; found both in England and in the neighborhood of Calcutta. It is common in the s. or Europe, is in Britain a summer bird of passage, arriving, however, very early in spring, and does not extend northward into Scotland. Its general color is brown; the under parts lighter. It is a very sprightly little bird; but its song consists merely of a frequent repetition

Chiff-chaff (*Sylvia hippolais*).

of two notes resembling the syllables chiff-chaff. It is called also the lesser pettychaps.

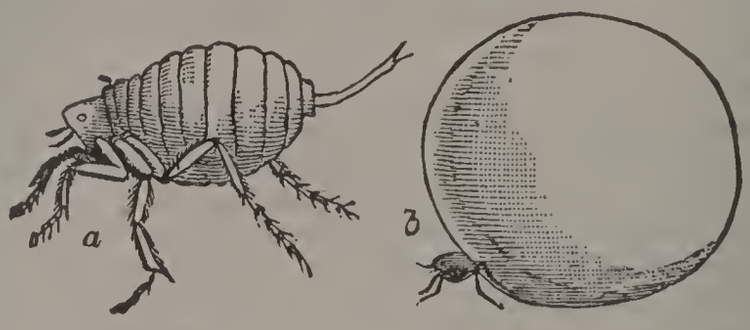
CHIFFONIER, n. *shĭf'fō-nēr'* [F. *chiffonnier*, a rag-picker—from *chiffon*, a rag]: a rag-picker; a kind of cupboard for holding scraps.

CHIGNECTO BAY, *shĭg-nĕk'tō:* the more westerly of the two inlets at the head or n. end of the Bay of Fundy, British N. America. It separates Nova Scotia from New Brunswick, is 30 m. long and 8 broad, and has an isthmus of only 14 m. in width between it and Northumberland trait, in the Gulf of St. Lawrence.

CHIGNON, n. *shĭn-yōng'* or *shĭ-nŏng'* [F., the nape of the neck]: a quantity of dressed false hair attached to the

back of the head—often forming part of a woman's head-dress, and resting on the back of the neck.

CHIGOE, *chĭg'ō*, or JIG'GER [see CHEGOE], (*Pulex* or *Sarcopsylla penetrans*): species of flea (q.v.), rather smaller than the common flea, and with less powerful limbs, found in the W. Indies and S America, where it is excessively troublesome, attacking any exposed part of the human body, and effecting a lodgment between the skin and flesh, often under the skin of the foot or the nails of the toes. At first its presence is indicated only by a slight




Chigoe (*Pulex penetrans*):
*a*, male: *b*, gravid female.

itching or tingling; but an ulceration is likely soon to be the result, not only very painful, but even dangerous, when the female C. is allowed to remain and to deposit her numerous eggs. Before these are deposited, her abdomen becomes distended in an extraordinary manner, as a membranous bag, to the size of a pea. The ulcer speedily contains a great colony of chigoes. The negresses of the West Indies are very expert in extracting the C., which is removed also by washing with tobacco-juice. Rubbing with tobacco-leaves is employed as a preventive of its attacks.

CHIH-LE, *chē-lē*, or PECHIH-LE *pē-chē-lē'*: one of the n. provinces of China, and the most important of the 18, as being the centre of government, and containing Pekin, the imperial capital, the residence of the emperor and court. Area, 58,949 sq. m. Pop. 17,937,000.

CHI- (or TSIN-CHI-) HOANG-TI, *chī-hwăng-tī*, or CHING WANG, Emperor of China B.C. 246–210: 'the Chinese Napoleon,' and the first for many centuries to assume the title *hoang*, or emperor. He found the country divided into eight feudatory states, which he subjugated and consolidated, expelling some barbarous tribes, and extending the empire nearly to its present limits. He built the Great Wall (of which some now deny the existence) by the labor for ten years of several million men, 500,000 of whom are said to have died under the task. To him is credited the first Chinese collection of statistics, with a view to equable taxation of lands and products. In his hostility to the learned class, he rashly and vainly attempted to impair the national conservatism by destroying the ancient books.

CHIHUAHUA, *chē-wâ'wâ*: city of the Mexican confederation, with considerable trade between Santa Fé, in New

Mexico, and the United States. It is in lat. 28° 40′ n., and long. 105° 33′ w., and has a cathedral, convents, and an aqueduct 3 m. long, besides 3 appropriate buildings, as the cap. of the state of its own name. Pop. of city, 12,000.

The state of Chihuahua, lat. 27° to 32′ n., and long. 104° to 108° 40′ w., is divided from Texas by the Rio Bravo del Norte. It is a table-land, more remarkable for mineral resources than for agricultural productions. It abounds in nitre and other salts, and is rich in mines of gold and silver. Pop. (1900) 327,004.

CHIKARA: see ANTELOPE.

CHILBLAINS, *chĭl′blānz:* redness and swelling of the skin of the feet and sometimes of other parts, accompanied by a most distressing burning and itching of the affected portion. The condition is an accompaniment of cold and damp weather and in those subject to it usually returns with persistent regularity each recurring autumn. The itching is often intolerable, being worse at night when the sufferer is in bed. Those subject to chilblains should wear easy shoes with waterproof soles and well fitting stockings, preferably of wool. The shoes and stockings should always be changed at the earliest opportunity whenever they have become wet. If the feet are cold they should be dipped into cold water and dried by contact with a soft towel without friction. Relief of the itching may sometimes be obtained by borax in solution or in ointment applied after dipping the feet in cold, or, sometimes better, very hot water. Painting the part with contractile collodion is sometimes of service, the slight pressure made by the dried collodion serving to drive some of the blood from the surface.

CHILD, n. *chīld* [AS. *cild,* plu. *cildra;* Dut. and Ger. *kind,* a child; Gael. *gille,* a lad]: a son or daughter; an infant or very young person; one weak in knowledge or experience of the world. CHILDREN, n. plu. *chĭl′drĕn,* offspring; descendants; the inhabitants of a country. CHILD′HOOD, n. the first 14 years of a human life. CHILD′ISH, a. like a child; trifling; ignorant; silly; implying censure when applied to an adult. CHILD′ISHLY, ad. *-lĭ.* CHILD′ISHNESS, n. the qualities of a child in regard to conduct; simplicity; weakness of mind. CHILD′LESS, a. without children. CHILD′LESSNESS, n. CHILDLIKE, a. becoming or befitting a child, implying praise, applied to an adult. CHILDREN, n. plu. *chĭl′dr,* in *OE.,* the common form of the word CHILDREN. CHILD-BEARING, the act of bringing forth children. CHILD-BED, the state of a woman bringing forth a child (see MIDWIFERY). CHILD-BIRTH, the act of bringing forth a child; travail. CHILD-CROWING, a spasmodic or bastard croup. CHILD-KILLING: see INFANTICIDE. CHILD'S PLAY, trifling contest; light work. CHILD-STEALING: see ABDUCTION. WITH CHILD, pregnant.

CHILD, *chīld,* Sir JOSIAH: eminent London merchant, and one of the ablest of the earlier English writers on

commerce and political economy: 1630–99; second son of Richard Child, merchant, of London. His principal work is *Brief Observations concerning Trade and the Interest of Money* (Lond. 1668, 4to); 2d ed., much enlarged, entitled *A New Discourse of Trade* (1690). In this work he explains his plans for the relief and employment of the poor, including the substitution of districts or unions for parishes, and the compulsory transportation of paupers to the colonies. He was one of the directors, and for some time chairman of the E. India company, and is said to have written several tracts in defense of the trade to the E. Indies, published anonymously. In 1678 he was created a baronet.

CHILD, Lydia Maria: 1802, Feb. 11—1880, Oct. 20; b. Medford, Mass.: author. Her father was David Francis, a baker, whose ancestor came from England to Cambridge 1636. She married, 1828, David Lee Child (1794–1874), a Boston lawyer and journalist. Her first book, *Hobomock* (Cambridge, 1821), an Indian story, was written at the age of 17. *The Rebels, or Boston before the Revolution* (Boston, 1822) introduced historical characters, and credited Otis with a speech and Whitefield with a sermon which many supposed genuine She taught a year at Medford, and at Watertown 1824–28; edited 1826–34 the *Juvenile Miscellany*, earliest American monthly for children; and wrote *The First Settlers of New England* (1829), and *The American Frugal Housewife* (1829), a cook-book which reached its 33d ed. 1855. The *History of Woman* (1832), and sundry feminine biographies followed, with an annual or two and a Greek romance, *Philothea* (1835). Under Garrison's influence she and her husband became recruits and leaders of the abolition movement. Her *Appeal for that Class of Americans called African* (Boston, 1833) was the first book of domestic origin against slavery; it won the thanks and roused the interest of Channing, and was followed by an *Anti-Slavery Catechism* and other smaller works. Her zeal in this cause never wavered: it is visible in many of her later books, and had its effect on thousands. She edited the *National Anti-Slavery Standard* in New York 1840–43, and assisted Mr. Child thereon another year, living in the family of Isaac T. Hopper, whose life she wrote 1853. Her *Letters from New York* (2 vols., 1843–45) appeared first in the Boston *Courier*. *Flowers for Children* (3 vols., 1844-46) were gathered from her *Juvenile Miscellany*. From 1849 her residence was at Wayland, Mass. Of her correspondence with John Brown, Gov. Wise, and Mrs. Senator Mason, of Va. (Boston, 1860), 300,000 copies were circulated. Among her other writings are *Fact and Fiction* (1846); *Power of Kindness* (Phila. 1851); *Progress of Religious Ideas* (3 vols., N.Y. 1855); *Autumnal Leaves* (1856); *Looking toward Sunset* (1864); *The Freedman's Book* (1865); *Miria, a Romance of the Republic* (1867); and *Aspirations of the World* (1878). She gave and labored much to aid the soldiers and the freedmen. She died at Wayland. Wendell Phillips said

at her funeral, 'She was the kind of woman one would choose to represent woman's entrance into broader life.' A vol. of her letters was published 1882.

CHILDE, n. *chīld* [from *child*]: formerly a noble youth; a poetical epithet applied to young heroes. CHILDERMAS-DAY, n. *chĭl'dėr-măs*, a feast of the church held on 28th December, in remembrance of the children slain at Bethlehem by Herod—called usually *Innocents' Day*.

CHILDERMAS, *chĭl'dėr-mas*, or HOLY INNOCENTS' DAY: observed by the church of Rome, Dec. 28, with masses for the children killed by Herod. It was considered unlucky to marry or to begin any work on this day. From Fenn's *Letters* (vol. I. 234) we learn that the coronation of King Edward IV. was put off till the Monday, because the preceding Sunday was Childermas day. Childermas is also noted on the calendar of the Church of England, and of the Prot. Epis. Ch. in the United States.

CHILD PSYCHOLOGY: See GENETIC PSYCHOLOGY.

CHILDREN, CAPACITY OF IN LAW: see INFANT: MINOR: PUPIL: GUARDIAN: TUTOR.

CHILDREN, CARE OF: children are human beings between the periods of birth and puberty, which last may vary in different individuals from the 13th year, or less to the 17th year.

Commonly, childhood is considered as extending from infancy (i. e. the end of the second year of life) to puberty. Children differ in so many respects from adults, that it is a mistake to speak of them as 'little men and women.' Because of these differences, they require special study, and those who do not give it, do not fully understand children, nor learn how to properly care for them.

*General Differences.*—Active growth and development of the body and most of its organs, characterize the healthy child. But this very activity of the vital processes while it assists the recuperative power, also makes the onset of certain diseases easier. All children are more susceptible than adults to acute diseases of the alimentary canal such as stomatitis, diarrhœa and dysentery; to stomach derangements, such as vomiting; to acute respiratory affections, such as pneumonia and bronchitis, and to certain communicable diseases, measles, scarlet-fever, chicken pox, diphtheria and whooping cough. These last are commonly spoken of as 'children's diseases,' and are often considered as inevitable and necessary, so that parents voluntarily expose children to the contagion. This is wrong, as these affections are sometimes fatal or leave behind them conditions which are dangerous. Physicians often marvel at the recovery of children from severe illness. Even those who were much debilitated, before the sickness attacked them, often recover when proper food, pure air, warmth, cheerful surroundings and other hygienic measures are instituted. But those having certain congenital diseases have a very poor chance.

The great aim on the part of parents and care-takers,

should be to build in children a strong 'resisting power' to disease, and to mental and moral impurity, to form a sound mind in a sound body. 'Usefulness in life, honor, purity and blessings of whole generations' result from proper care, and 'worthlessness, disgrace, putridity of body and mind, and the curse of long ages to come,' from improper care.

As the twig is bent the tree inclines. The vital forces of young children are occupied almost exclusively with nutrition, the growth and development of organs essential to the existence of the individual. From youth onward the voluntary control of the nervous system becomes more marked, and self culture or self debasement asserts itself. Perpetuation of the species is prepared for, at puberty.

*Their Bones.*—In very early life the bones are soft and cartilagenous, but gradually they become harder, cartilage being replaced by bone, as food such as milk, cereals and meat juices supply the necessary phosphatic salts. In the disease called Rickets, these salts are insufficient, and the weight of the child alone, may cause curvatures of bones, and the deformities known as 'bowed-legs' and 'knock knees." Due to a preponderance of animal matter, the bones of children are more elastic than those of the adult, and are less likely to be broken. But they may bend from unusual muscular contraction or from great pressure, such as is caused by carrying very heavy loads upon the head, shoulders or back. The cartilages on the ends of certain bones of children and which are quite loosely attached may be displaced, or together with the ligaments and synovial membranes of the joints, may become inflamed by jerking young children about or lifting them by one of their arms, a too common practise.

*Muscles and Muscular Exercise.*—The muscles of children are softer and less capable of great efforts than those of adults. If they are over-worked they become weak, as do muscles that are seldom used. In certain occupations where child-labor is employed, not only is there little out-door life but certain muscles are developed at the expense of others and general debility results. Certain muscles of the back become weakened and curvature of the spine appears, when children are forced to sit, at work, upon benches without backs, or when faulty postures are assumed at desks or tables or when heavy school books are carried repeatedly on one arm.

Muscular exercise is necessary not only to develop and strengthen muscles but to increase the force of the circulation, improve digestion, promote the consumption of oxygen by the lungs and so improve the quality of the blood, and to increase mental energy.

Children need an abundance of play, but they should also learn to do light work, and both should, as far as possible, be carried on in the open air, but never to the point of exhaustion. Exercise in bad weather may be taken in-doors, the children being well clad and the windows open. Even cold weather is no bar to out-door life,

if children are properly clothed. They should be taught that to be in good health as well as 'cheerful and gay,' they should 'work while they work, and play while they play'—not dawdle.

Babies or older children should not be carried more than is absolutely necessary. Let them learn to crawl and walk, and their limbs have free and varied movements on the bed or properly covered floor, in a warm and well ventilated room. Their movements should not be impeded by tight or heavy clothing. Encourage children in out-door games. A healthy child is generally very active and restless. Healthy boys have been known to cover 20 miles a day in their work and play, as shown by the pedometer. The fact that a child does not care to play but wants to loll about, is a sign of something wrong.

*Rest.*—Associated with exercise, and also necessary for health is *rest*, acquired by periods of ordinary inactivity, change of work and play and by sufficient quiet sleep. A healthy baby sleeps a large part of the time. An older child may well take a nap in the daytime. Children should be taught to sleep as far as possible at regular hours, and in a dark room, and not to be disturbed by ordinary noises. The bedroom should be warm but well ventilated and the child's night clothes and bed clothes light but warm. An elastic but firm mattress is best. The meal before retiring should be a light one, else sleep is likely to be restless and filled more or less with dreams which are apt to become 'night-mares' or even 'night terrors.' Restless sleep is produced by nervous excitement before retiring, by improper food, insufficient warmth, too much light, unusual noises, enlarged tonsils, cough, pain and discomfort.

*Breathing-Air.*—Children breathe more rapidly than adults, and need proportionately more air. They should be taught to breathe through the nose, and to inflate their lungs from time to time in the open air. Shallow respiration shows weak lung power, and paves the way for consumption. Indians compel their children even the babies, to breathe through the nose, by keeping the mouth shut at night, with a bandage under the chin and over the head. Hence the wonderful ability of Indians to take very long journeys, even on the dog trot. Mouth-breathers are pitiful objects. They have enlarged tonsils, pigeon breasts and ill health. The mouth, nose and pharynx should be clear, enlarged tonsils, nasal and post-nasal growths removed.

The breathing of pure air is necessary for the blood to nourish the body as it should, Even little children can stand ordinary cold air if they are warm and comfortable. But 'draughts of air cut like a knife.' Stuffy, close rooms, emanations from improperly regulated furnaces and stoves, from clothes washing, tobacco smoking, overcrowding and other sources, are to be avoided.

*Circulation—Animal Heat.*—The circulation of children is more rapid than in the adult, and the pulse beat higher. Certain diseases involving the blood, spread therefore more

rapidly. Fever, or an increased animal or vital heat is more easily aroused and from apparently trivial causes. But at the same time it is, as a rule, more easily dispelled, and has not always the significance it has in adults. Severe heat of the head, associated with coldness of hands and feet, should put one on the guard against convulsions. Testing the temperature of the body with a cool hand is much better for care-takers than the absolute reliance upon clinical thermometers, many of which sold in department stores and other places are unreliable. If reliable their reading may cause unnecessary alarm, as the normal temperature of a child is higher than that of the adult, but above normal is not always indicative of grave disease. High temperature may be considerably reduced by drinks of cool water, by sponging the body with cool water, or by inunction of oil. Medicines had best be left to the physician. Subnormal temperature, one or more degrees below normal, is induced by general debility and some forms of disease, and must be remedied by warm, digestible food, and by keeping the body, and especially the feet, warm.

*Digestive organs.*—The stomach of young children is more sensitive and lies in the body in a more vertical direction than in the adult. Vomiting is more readily induced by indigestible food, whether in quality or amount, and the habit of vomiting paves the way for chronic dypsepsia. The principal objection to jolting a child up and down as is commonly done to quiet it, is, that it is liable to upset the stomach. The large intestine is proportionately longer and larger, and with the small intestine, more sensitive. Bowel derangements are apt to be more severe, and intestinal hemorrhage from polypi, etc., more dangerous. The teeth, the first and most of the second set, appear in childhood. But the common belief that many ailments are due to dentition is greatly exaggerated. It is now generally understood that proper care of the first set, has much to do with the proper cutting and strength of the second. Cleanliness of the teeth, the occasional rinsing of the mouth with a weak alkaline solution, and the filling of cavities by the dentist, should be observed. The mouth should be inspected from time to time and foreign particles between and about the teeth and gums gently removed. Metal toothpicks should never be used, every child should be taught to hold down its tongue with a fore-finger, when the throat is to be inspected, and thus the terror sometimes excited by a spoon or spatula is prevented.

*The Skin—Lymphatics—Absorption.*—The lymphatics and the skin are more active, and also the process of absorption. Irritation and sometimes inflammatory products are therefore conveyed more readily from one part of the body to another. For example, a skin disease of the scalp is quite often followed or attended by enlargement of the lymphatic glands in the nape of the neck; inflamed tonsils by enlarged and sore glands under the lower jaw; intestinal inflammation by enlargement of the glands in the mesentery.

## CHILDREN.

*Bathing.*—A sweet baby is to be much preferred to a sour-smelling one, a clean child to a dirty one, but children love to play in dirt and sand and there is no objection if the dirt and sand are clean. Children, not allowed to occasionally soil clothes, faces and hands, lead an unnatural life and are to be pitied. Grime can generally be removed by washing face and hands in warm water and Indian meal, then in clear water with or without soap. All children should become accustomed to bathe in cool water, as such water is the most invigorating, but they should not be cruelly forced to use it. Cool water may at first follow the use of warm water and gradually replace it. Whenever a hot bath is used, as in convulsions, the child should if possible be lowered into the tub upon a sheet. At the same time cool water is poured upon the head. A sea bath should not be given by ruthlessly putting the child beneath the water. It is cruel, for a child of nervous temperament or in ill health may be frightened into convulsions, St. Vitus Dance or some other nervous disorder. Either gently lead the child into the water or gently dip the lower part of the body, in both instances wetting the head and shoulders with water from your hand. One or two such efforts at sea-bathing is sufficient on any one day. Proper bathing not only invigorates the whole body, by its stimulation of blood vessels, nerves and muscles, but it also removes dirt, and by keeping the pores open allows the skin to carry on its six functions, and so tends to health. In most forms of baths a good soap should be used and the bath should be followed by brisk but gentle friction. For very young children a sponge or dip bath is desirable each day or on alternate days. Older children, especially if exercising much in the open air, may take a bath daily. Bathing should not be continued if the skin is chilly, and finger nails and lips are bluish, else it will do harm. Dirty skins favor the onset and spread of itch, ringworm and body vermin, and these are some of the risks of school-life. Children should learn to use the five brushes—hair, tooth, nail, clothes and shoe brush.

*Clothing.*—Insufficient clothing, as a matter of fashion, too much as the result of over anxiety, and a scarcity because of poverty are all undesirable. Clothing should be adapted to the health and strength of the child, and to the weather. Under-clothing is the most important part of clothing, and should be largely of wool or of silk and not colored with poisonous dyes. Outer clothing should be of light color in warm weather and of dark in cold weather. More attention should be paid to comfort rather than style so that the child can freely move its limbs and body and expand the chest. Comfortable foot gear is essential not only for ready exercise but to preserve the beauty and mobility of the feet. Bed as well as body clothing should be dry, clean, light, of sufficient quantity and well ventilated. Dirty clothing not only harbors filth but is likely to harbor disease germs. Too much clothing is as bad as too little, mittens are examples of

light but warm articles of clothing, and two pairs of cotton stockings are warmer than one pair of woolen ones.

*Fat of the Body—Food.*—A healthy baby should have plump cheeks and chubby extremities. It needs considerable fat to help maintain animal heat (during infancy when but little exercise is possible), and also to live upon when sufficient food cannot be consumed. Young children lose fat rapidly and emaciate when such food is absent, but regain it rapidly, when it is supplied. An overfed baby or young child becomes either gross or puny and in both cases lacks resisting power. As growth proceeds and activity replaces inertness, the fat of the body diminishes, so that a very fat boy or girl (unless the fatness is hereditary) is usually regarded as one whose nutrition is at fault or whose diet is too generous. At about 9 or 10 years of life the child should grow taller and thinner. Most children do not like fatty food, but they should be encouraged to eat it. Sugars, and starches do similar work in the body and are needed in moderation, but poor, adulterated candy is the bane of many a child. Babies should be nursed if possible, and at approximately regular hours. If fed, milk should be the principal food. Gradually cereals, bread, vegetables, broths, fruit juices and lastly meat should be a part of the diet. Older children need a mixed diet, with considerable milk and should be allowed to eat all they can digest readily, but no more. They should learn to eat the crust of bread as well as the soft part. All cooked foods should be thoroughly done, fruits should be ripe but not over-ripe. The lack of an appetite points to an indigestion or the beginning of some illness.

*Nervous System, Its Care.*—The sensitiveness and activity of the nervous system are greater in most children than in adults. Their feelings are often keener and their sufferings more real, and they readily acquire good and bad habits from imitation. They need firm but gentle ruling. Coddling produces wayward, unreasonable children, severity breaks their spirits and they lose faith in human beings, even their parents. To train a child to become useful, unselfish and obedient requires persistent study and care. Young children, like other young animals are largely emotional. They are apt to exaggerate, and it is hard for them to estimate or locate pain. Sudden surprises are dangerous. Startling a baby and even an older child may produce chorea. Sudden atmospheric or dietetic changes may affect as unpleasantly. Gentle music, the crooning lullaby, soothes a young child, but the so-called amusing of a baby, as by persistent tickling, may produce nervous disorders. Convulsions especially during the first two years of life are quite common from such causes as indigestible food, worms, and sunstroke. Chorea and other nervous disturbances may occur then or later, especially in ill-nourished children of a nervous type, who worry and are easily frightened. Headache and nearly all the mental diseases of adults may be duplicated in children, but hydrocephalus is a disease of childhood.

## CHILDREN.

Up to the 7th year of life the brain grows rapidly, afterwards more slowly. In the early part of life it works automatically and should be educated by gently encouraging observation and reasoning. Kindergarten methods teach habits of neatness, order, punctuality, observation and civility. The young pupils in kindergartens are in an atmosphere of physical purity and health, and if necessary the children are fed, bathed and clothed. Mother's meetings in connection with kindergartens result in teaching parents as to the care of children.

*Special Senses.*—The special senses are to be developed slowly but carefully and all optical defects should be remedied and children should not read or work by poor light. Dazzling light, rapid movements before the eyes, shrill and loud talking and noises, pungent odors and substances with sharp flavors used as food are harmful. It is said that babies first observe yellow, then red, white, gray, black, and the blues and greens. Over stimulation of the brains of bright children and even of the backward weakens them.

*Mental Training.* The precocious child, much as it may be admired by some, is an anomaly, and is not likely to be well enough grounded in the ordinary necessities of life to successfully cope with the ills, disturbances and disappointments of later life. Teach the child self control, the great preventive of ungovernable temper, bad habits, of an exaggerated egotism and of many foolish or dangerous actions. Teach him also to be self reliant and helpful to others. Teach these matters as soon as possible in the child's life so that they may become habits, which will dominate the individual through life.

*Moral Training.*—Children having no clear ideas as to the difference between right and wrong may be influenced by stronger minds to become immoral or to commit crimes. 'Parents can seldom be brought to see the corrupt morals of their own children, therefore few corrupt children are either admonished or punished.' Such children even testify against their innocent parents or friends to favor others for whom they have an attachment. The records of the children's courts are full of such cases. The indeterminate sentence with probation now given by many judges in the case of depraved or criminal children, recognizes that these children may be reclaimed, if kept for a considerable time under the eye of proper guardians. The kind of companions and play-fellows a child has, has much to do with its purity, honor and usefulness. Vile pictures and language, and immoral practices appeal to some children.

The way to control a child or to reform it is to obtain its sympathy by letting the child feel that you are really its true friend, for a child is quick to detect shams. But your sympathy and pity must not cloud your judgment. It is hard work to make some children understand that the truth means 'the truth, the whole truth and nothing but the truth'—yet this is the only ground to work upon—in education and reformation.

CHILDREN AND YOUTH, LITERATURE FOR: the idea of a special literature for children, juvenile literature, as it is called, is, on the whole, peculiar to modern education. The horn-book of the 16th century, the primer of our own time, these had their equivalents in the teaching of Greek and Roman children, but from them the pupils seem to have gone directly to the reading of books quite as suitable for adults as for them, or at least, intended by the writers for adult readers. In the middle ages only clerics read. Children intended for the Church were placed under the tuition of the monks, and learned to read first of all sacred writings and the lives of the saints.

Songs, folk-lore, fireside tales, these are the natural pabulum of the child mind. By the men and women of early times, however, they were as gladly heard as read, and only in the case of the really erudite was other reading desired. Then, with the Renaissance came the more widespread enjoyment of the literature of thought, that is, of philosophy and history. Slowly, too, the novel developed as a separate literary type; more and more the story or poem took on an analytic or thought form distasteful if not incomprehensible to children. Thus, toward the end of the 18th c. the need was felt for simpler stories and poems to satisfy the demands of young people. Moral tales and verses, nursery rhymes, adaptations of Scripture stories and of classic fables, were published in considerable numbers.

*Goody Two Shoes* was one of the earliest of the useful stories for children published in England. Later, at the beginning of the 19th c., came Maria Edgeworth's *Moral Tales*, in a collection aptly named *The Parent's Assistant*. In America the Reverend Jacob Abbott contributed about 200 volumes to juvenile literature, his best, known works being the *Rollo Books*, the *Lucy Books*, *Science for the Young*, and the series of historical stories in which he was assisted by his brother, John S. C. Abbott.

The 19th c. was marked in the science and history of education especially by the Child-Study (q.v.) idea. Initiated by the practical work of Pestalozzi and Froebel before 1850, it reached a remarkable development in the last quarter of the century, when the physiological psychology of childhood and youth was made the subject of indefatigable study by scientists on both sides of the Atlantic. Perhaps the most noted writer on this subject in America is Dr. G. Stanley Hall, President of Clark University at Worcester, Mass. 'Between one famous page in Aristotle and these thirteen hundred pages of Stanley Hall there is nothing of the psychology of childhood,' says Compayré in a review of Dr. Hall's book on *Adolescence*.

So strong has the influence of psychological pedagogy become, that all well-educated parents, as well as teachers, feel the need of some guidance in the bringing up of children. Faithful coöperation of school and home influences is a recognized desideratum. Especially in the

reading done by a child is the necessity of watchfulness, if not of constant direction, accepted as the responsibility of adults. In preparing, then, an outline of a reading course for young people, it would be wise to have at hand a brief outline of the results of Child-Study, (q.v.). Such an outline is attempted herewith.

The development of the child-mind after infancy may be divided into three periods, always more or less distinct, as follows: (1) from 3 to 7 years of age; (2) from 8 to 12; (3) from 12 to 16 years. These periods show certain general characteristics, as writers on the subject have learned from the painstaking study of innumerable data.

I. *From* 3 *to* 7 *Years.*—This is the age to which especial study was given by Froebel and his followers. Children at this period require care and instruction, but should not be made conscious of officious over-attention. Minds as well as bodies grow and expand with natural and spontaneous play. The idea of Froebel in the Kindergarten was, as he expressed it, to cast about the child a 'loving check-rein,' guiding its play along definite lines of instruction and development. The mistake made in the system, many writers now think, is in the enforcement of attention to detail. The capacity for discrimination of shapes, sizes, colors, and sounds comes very gradually to the child and should not be forced. Memorizing of games and little songs is both a pleasure and a source of growth.

II. *From* 7 *to* 12 *Years.*—This, says Dr. Hall, is the time of chief mental training. It is a period of indefatigable physical activity, of insatiable curiosity for good and evil. Care and direction are most necessary, yet it is now that the child is, as a rule, most 'trying' to his adult relatives. The attractiveness of babyhood is passed, and traits of lawlessness, lack of affection, even meanness, appear. These should be leniently regarded. Occasional acts of cruelty, even, may not cause anxiety, as they are merely forms of curiosity. If obedience has not been made a habit before this time, it becomes increasingly difficult. Drill-work of all sorts is good; memorization is of great assistance; and the learning of manual tasks is necessary. To quote again from Dr. Hall, 'the hand is never so near the head as now.'

III. *From* 12 *to* 16 *Years.*—A distinct change now comes into the mental life of the child. From a sort of indifference to the life of adults he turns to interest in older people and a wish to copy their ways. A new interest in and deeper love for Nature also is awakened, and music and art begin to affect the emotional nature. The mind is to some degree in a fallow state. It is fatigued sooner and more easily and does not benefit from drill methods as before. Knowledge sinks in and is only gradually understood, and with this slowness comes a power to appreciate far ahead of the power to express. Expression, then, should be assisted but not forced; for the constant absorption by the mind of what is good in

nature, literature, and art will have results evident enough in the richness of expression in later years.

With this classification by ages, a choice of books for young people may be intelligently undertaken. Of course a broad generalization is always faulty, but the following suggestions can be readily adapted to the wonderful variety of individual needs.

I. First of all let the child hear and learn songs: nonsense rhymes, for the pleasure of the jingle, then nature and fairy songs. And there should be no hesitation in giving the child fairy stories and myths. To deprive children of folk lore is to rob them of a long heritage of imagination and beauty. Recitations of these ideas are made naturally and almost unconsciously as the mind develops, 'by a process,' says one writer on Pedagogy, 'best described as desquamation.' Indeed, if it were not so, Bible stories would come under the same condemnation; for very carefully taught children will be found to have odd, not to say grotesque, ideas of sacred persons. An interesting discussion of this subject may be found in *The Idea of God* by John Fiske.

At this early period the child, of course, has little to do with actual books. But he should hear good reading aloud, thus acquiring a sense of sound, rhythm, and tone. It is not necessary for him to understand every word: in fact, explanation is better dispensed with than overdone.

Examples of good books for this period: *Mother Goose; Grimm's Fairy Tales; The Nonsense Book* of Edward Lear, and others of the same sort; *Stories from the Bible; Shakespeare's Fairy Songs; Æsop's Fables;* Kipling's *Just So Stories;* Stevenson's *Child's Garden of Verse;* simple poems by Longfellow, Whittier, and others; simple animal stories.

These need not be true; in fact, many very fanciful stories, such as *Those Dreadful Mouse-boys* by Ariel, or *The Cosy Lion* by Mrs. Burnett, give children great delight.

There are many modern child stories of great worth. And by the time he is seven or eight the child should be familiar with Lewis Carroll's *Alice in Wonderland* and *Alice Through the Looking-glass.*

II. As this is the period—from 8 to 12 years—when memorizing is easily made a habit, and the love of excitement of primitive kinds is predominant, the reading and learning of heroic poetry is useful and very attractive to children. In prose, fairy tales will still be read with pleasure, but will gradually give place to stories of heroic deeds. Stories of Robin Hood, of Roland, of King Arthur, and other heroes, and compilations from the classics, such as Mr. Alfred Church's excellent series of stories from Greek writers—all these will be much liked. Herbert thought that between 9 and 12 years of age boys were better fitted to understand and appreciate the substance of Homer than at any other time. From these heroic deeds to tales of modern patriotism is an easy step,

and the rather crude but interesting 'virtue rewarded' stories of G. A. Henty and J. T. Trowbridge will be found very good. Another type of book, appealing especially to girls of this age, are the stories of American and English home life, such as those of Louisa Alcott. But books of mawkish and sentimental morality should be sternly avoided.

It is neither wise nor necessary to make much difference between books for boys and books for girls. The girls like stories of heroism quite as much as their brothers, and profit by them as fully. An excellent way to bring their reading interests together is by subscribing to a young people's magazine, in which serial stories, puzzles, and correspondence keep their attention from month to month.

Examples of good books for this period: Hans Andersen's *Fairy Tales;* Andrew Lang's *Fairy Books;* Miss Mulock's *The Little Lame Prince* and *Adventures of a Brownie;* Hawthorne's *Wonder Book* and *Tanglewood Tales;* James Baldwin's *The Story of Siegfried* and *The Story of Roland;* Malory's *Morte D'Arthur;* Howard Pyle's *The Adventures of Robin Hood;* A. J. Church's *Stories from Homer* and *Stories from Greek Tragedians;* Lamb's *Tales from Shakespeare;* Macaulay's *Lays of Ancient Rome;* Aytoun's *Lays of Scottish Cavaliers;* Hawthorne's *Grandfather's Chair;* C. C. Coffin's *Boys of '76* and *Building the Nation; The Arabian Nights; Robinson Crusoe;* Kipling's *The Jungle Books;* Thompson Seton's *Wild Animals I Have Known;* Roberts's *Kindred of the Wild;* Lang's *The Animal Story Book;* Dickens's *Child's History of England;* Mark Twain's *The Prince and the Pauper;* Lanier's *The Boys' Froissart;* Alcott's *Little Women, Little Men, Jack and Jill,* and *Eight Cousins;* Coolidge's *What Katy Did;* Beard's *The American Boy's Handy Book;* Poems of Patriotism from Longfellow, Drake, Holmes, Whittier, Lowell, etc.

III. With the change in mental attitude mentioned in the classification of ages, comes a gradually changing taste in reading. The hero story continues to be attractive, but the interest of romance enters side by side with the increasing interest in the life of grown men and women. Historical novels of the best sort should be placed in a child's hands now, and will be read with the most perfect sympathy. It is well to remember that at this time the taste is more nearly formed and its vitiation by the reading of trash is a serious matter. Many parents are so unwise or at least so indifferent as to let their children cram their minds with all the current fiction, good or bad, while Shakespeare and Bunyan, Scott and Dickens, stand unopened upon the bookshelves. It is true that the young boy or girl will not understand all the discussions or descriptions in the works of great authors. But the unspoiled mind has great patience and does not object to 'slow reading' if the story and the characters taking part in it are made real; and the best books, read in this way, are a lasting delight and not merely an irksome

task. So long, however, as children hear little of the classics and much of sensational writers, so long as the classics are kept behind locked glass doors while cheap novels and cheaper magazines lie on the reading table, just so long will the copying instinct of boys and girls set them to reading the easiest thing, and just so long will their minds be disappointingly incapable of concentration when at school.

A taste for poetry should be more or less natural in every child, and at this age it should be especially encouraged and guided. The sense of beauty should be stimulated by familiarity with such poets as Tennyson, Keats, and Wordsworth. The awakening love for nature and art will find nourishment also in the many excellent books on these subjects written especially for young people. These same nature books train the eye and mind to observe and reason; and well-written, interesting detective stories really serve a like purpose. Toward the end of this period, books of discussion and advice to young people, such as Ruskin's *Sesame and Lilies*, Emerson's *Essays*, and Carlyle's *Sartor Resartus*, if not forced as a task, will be read with interest and generally with eagerness.

So wide is the choice of books for young people from 12 to 16 years of age, that any list must of necessity be a mere suggestion. The following works, arranged with an attempt at sequence, may at least be found useful.

Scott's *Ivanhoe* and *The Talisman;* Yonge's *Unknown to History;* Irving's *Legend of Sleepy Hollow* and *Rip Van Winkle;* Cooper's *The Leather-Stocking Tales, The Spy,* and *The Pilot;* Kipling's *Captains Courageous;* Shakespeare's *Henry IV.* (Part 1); *Henry V., As You Like It, Maebeth,* and *Merchant of Venice;* Dickens's *Tale of Two Cities, David Copperfield, Great Expectations,* and *Nicholas Nickleby;* Swift's *Gulliver's Travels* (arranged for children); Bunyan's *Pilgrim's Progress;* Kingsley's *Westward Ho;* Scott's *Quentin Durward, The Pirate, Waverly,* and *Kenilworth;* Tennyson's *Idylls of the King* and *Miscellaneous Poems;* Wordsworth's *Lyries;* Wallace's *The Fair God* and *Ben Hur;* Hughes's *Tom Brown's Schooldays;* Stowe's *Uncle Tom's Cabin;* Harris's *Uncle Remus Stories;* Longfellow's *Poems Miseellaneous, Hiawatha, Evangeline, Courtship of Miles Standish,* and *Tales of a Wayside Inn;* Addison's *Sir Roger de Coverley;* Ruskin's *Sesame and Lilies;* Carlyle's *Heroes and Hero Worship* and *Sartor Resartus;* Bacon's *Selected Essays;* Emerson's *Selected Essays* and *Selected Poems;* Jane Austen's *Pride and Prejudice* and *Sense and Sensibility.*

Besides these and others which may come under the head of literature, there are many text-books or books commonly used at schools as supplementary readers, which are especially helpful. A few examples follow: Guerber's *Myths of Greece and Rome;* Mabie's *Norse Stories;* Bulfinch's *Age of Fable, Age of Chivalry,* and *Legends of Charlemagne:* Dana's *How to Know the Wild Flowers;*

Burroughs's *Sharp Eyes;* M. O. Wright's series on *Bird Study;* Earl's *Sabbath in Puritan New England;* Bates's *English History as Told by English Poets;* Robinson's *Readings in European History.* The object throughout, in the guidance or suggestion of reading for young people, should be to move along the line of least resistance with a double purpose: first, to form the child's taste and understanding through constant knowledge of the best, so that the unwholesome or trashy is unattractive to him, and he may have an ever-increasing store of memories of good literature as a mental resource; second, to make these works a source of help in character building. Naturally, and without any self-consciousness on the child's part, there should grow in him a fine and true ideal of character as the thing to be most admired. And as the ideal in the mind tends constantly to realize itself in character, so literature well chosen may be a strong instrument in the making of an ideal nation.

CHILDREN, SOCIETY FOR THE PREVENTION OF CRUELTY TO: in New York, an assoc. of citizens incorporated under a gen. law of the legislature passed 1875 for the purpose of protecting children from cruel and intemperate parents and guardians, as well as from extreme poverty and positive neglect. Its formation was inspired by the late Henry Bergh, founder of the American Soc. for the Prevention of Cruelty to Animals. It was organized 1874, incorporated 1875, and began its beneficent work with full legislative authority to prefer and prosecute complaints against violators of the law, receiving additional authority 1876, when the legislature passed an act restricting the industries in which children may be employed. The soc. is supported wholly by voluntary contributions; cooperates with the boards of health and police in exposing and suppressing fraudulent protectories and child and day nurseries, and promoting the health and comfort of children in crowded and impure tenements; guards children from those who would use them for selfish and illegal purposes; gathers the sick from baneful surroundings and places them in asylums and wholesome homes; prevents the employment of children of tender age in factories, stores, and theatres; and acts as custodian of such as are taken from parents and guardians by order of the courts. Since 1882, when the society's reception was opened, all these children have been sheltered, clothed, and fed, the meals aggregating several thousands. The headquarters of the soc. are at 297 Fourth ave., New York city, and the soc. is administered by a board of 15 directors.

CHILDREN'S AID SOCIETY: established in New York, 1853, chiefly by Charles Loring Brace (q.v.), who was its helper and manager till his death. It was his one belief that the work of reclaiming the ignorant and vicious, to be effective, must select its subjects in tender years; his object, to care for poor and neglected children in the city, to rescue them from contaminating influences, give them the rudiments of education, and find homes and occupa-

tions for them, usually in the country. The machinery of this work has been mainly supplied through lodging-houses (of which the first, for newsboys, was established by Mr. Brace 1854); by industrial schools, in which many thousands of boys and girls have been sheltered, fed, and taught; and by the Sick Children's Mission and Summer Home, founded 1874, which has saved many lives. By consequence, as police statistics long ago showed, 'vagrancy and crime among young girls has been greatly diminished, while among boys criminal offenses have not grown with the population, but have been held decidedly in check.' Simply as a measure of public economy, it is cheaper to prevent crime than to punish it, to instruct than to imprison. The cost of caring for these children by the soc. has been hardly more per head than that of education alone in the public schools. Some 4,000 are annually placed, mainly on the western farms, and over 2,000 enjoy the benefit of the summer home. The influence of the soc. has been great in inducing similar beneficence. Like organizations have been formed in other cities, summer excursions (often furnished by the great newspapers, see FRESH AIR FUND) have given a little fresh air and recreation to children from the tenement-houses, and public interest has been drawn to an enterprise which appeals so strongly alike to humane sympathies and to municipal self-interest.

CHILDREN'S COURTS: within the last few years, only, have Children's or Juvenile Courts been established in the United States, the result of much thought and of the adoption of suitable laws for the betterment of children. It is now possible to prevent the jailing and holding of young children as criminals, and to separate them while under arrest or detention from adults charged with crime. It is recognized that the separate courts for children should be presided over by experts in the management of children. There are no juries. It is now considered wise and only right that no child under 16 shall be treated as a criminal, but as a child needing formation instead of reformation, that he shall not be punished to make an example of him, that the State must exert its parental instead of its criminal power in his case. To keep children in jails in company with old offenders simply educates them in crime and converts them into expert criminals.

In 1836, Massachusetts provided for children not having necessary support and sustenance in poor houses, or bound them out, and insisted upon 'a decent christian education.' From 1790 to 1825, other states provided for their needy and destitute children in a similar way. Later, authority was given to designated officers to send certain children to reformatories instead of to prison, as had been the custom before, and it was a misdemeanor to neglect to restrain children from begging, from admittance to theatrical exhibitions in the evening without guardians, etc. In 1892, New York State decided that children to be tried for any violation of the penal code, may be tried apart

trom the trial of other criminal cases. This was the first attempt to establish a Children's Court. The example was followed by Illinois in 1899. In 1902, in New York City, was established the first Children's Court in a separate building apart from any other criminal court.

At the present time Children's Courts in separate buildings or otherwise are in operation in Michigan; San Francisco and Los Angelos, Cal; New Haven, Conn.; Denver, and Pueblo, Colo.; Wilmington, Del.; Atlanta, Ga.; Chicago and Springfield, Ill.; Indianapolis, Terre Haute, Ft. Wayne, Evansville, and Crown Point, Ind.; Dubuque and Des Moines, Iowa; New Orleans, La.; Baltimore, Md.; Boston and Lowell, Mass.; Minneapolis and St. Paul, Minn.; St. Louis and Kansas City, Mo.; Newark and Elizabeth, N. J.; New York, Brooklyn, Syracuse and Buffalo, N. Y.; Cleveland and Cinncinati, Ohio; Philadelphia, Pittsburg and Chester, Penn.; Providence, R. I.; Milwaukee, Wis.; and Washington, D. C. In some states the judge of the Children's Court is detailed from some other court. He becomes a specialist when he devotes his time to the Children's Court alone. But Judge Lindsley of Denver who is a judge of the County Court, as well as the only judge of the Childrens' Courts, considers this dual arrangement an advantage, because as judge of the County Court he can sentence the person who is responsible for the downfall of the child. For Colorado now holds parents, saloon keepers and others responsible for much of the so-called 'delinquency' of children—a step in the right direction.

Legally, children to be arraigned are divided into two classes, the 'dependent' and the 'delinquent.'

A dependent child is one 'who for any reason is destitute or homeless or abandoned, or has not proper parental care or guardianship or who habitually begs or receives alms, or who is found living in any house of ill fame, or with any vicious or disreputable person, or whose home, by reason of neglect, cruelty or depravity on the part of the parents, guardian, or any other person in whose care it may be, is an unfit place for such child.' Such children are usually sent to some Home or Asylum.

A delinquent child is 'any child under the age of 16 who violates any law of this state, or any city or village ordinance, or who is incorrigible, or who knowingly associates with thieves, vicious or immoral persons, or who is growing up in idleness or crime, or who knowingly frequents a house of ill fame, or who knowingly patronizes any policy shop or place where any gaming device is or shall be operated.' Children arrested for delinquency either remain at home with their parents or guardians, or are kept in suitable detention Homes, until trial.

Judge Mayer of New York City classifies children who have been arraigned as (1) mischievous children, (2) children who commit crime because of temptation, (3) because of environment and bad associations, (4) because of parental neglect or incompetency, (5) children with

criminal tendencies, (6) who are runaways and vagrants, (7) disorderly and ungovernable and (8) who are neglected or abused by their parents. Judge Wilkens of Brooklyn enumerates them as (1) Bad children, (2) Troublesome, (3) Destitute, and (4) Unwelcome children, whose guardians have tired of their care.

In the Children's Court, each child is arraigned separately unless there are two or more children charged with one offense. The judge talks to the boy or girl (in the presence of the parents, it may be), as a good father should. Many parents in consequence learn to appreciate that the aim of the Court is to transform their bad or disobedient children into good citizens. The children are admonished and corrected, but not as criminals. Suspension of sentence and putting the child on probation whenever possible is the rule. The reform school is the last resort. Probation officers investigate each case before trial, and if the child is placed on probation exercise watchful care over him until the time of probation is closed, striving meantime to have him engage in some useful occupation.

In several states the schools and police co-operate with the courts in means for the prevention as well as the cure of delinquency, and much good has been accomplished.

As results of the operation of Children's Courts, (1) more than one-half of the delinquent children placed in the care of qualified probation officers do not need to be brought a second time to court, (2) the cost of saving children through probation is very small compared with old methods of procedure, involving jury and jailor's fees, mileage, support in jail, etc., (3) to more thoroughly reveal the sources of contamination of child life, evil surroundings, irresponsibility of guardians, physical defects, truancy, bad playmates, etc., and to point out and apply the remedy.

The general criminal court has no time to consider the intricate problems connected with child-life especially in large cities.

CHILDS, George William, ll.d.: 1829, May 12—1895, Feb. 3: publisher; b. Baltimore. He received a private school education; served 15 months in the U. S. navy; settled in Philadelphia 1843; worked in a book store four years; established a store of his own and began publishing books; and before reaching his 21st year was head of the firm of Childs & Peterson. In 1863 he retired from the firm and purchased the *Public Ledger* newspaper. He acquired wealth rapidly, and put it to liberal use, promoting local and public objects that appealed to his pride for his city or to his large sympathies. He was one of the originators of, and largest contributors to, the Zoological Garden, the Penn. Museum, and the School of Industrial Arts; was active in securing Fairmount Park to the city; and was earnest, constant, and efficient in his efforts to make the Centennial Exhibition a success. He erected a stained glass window to the memory of the poets Herbert and Cowper in Westminster Abbey, London; a monument over the unmarked grave of Leigh Hunt in Kensal Green;

a drinking fountain and clock tower at Stratford-on-Avon 1887, and a window to John Milton in St. Margaret's Church, London, 1888. He received his degree from Grant Memorial Univ. 1887. He published *Recollections of Gen. Grant* (1885); and *Personal Recollections* (1889).

CHILD STUDY: the science of child study is of recent development. It was really organized with the epoch-making work of Preyer in 1881, though a few books like those of Kussmaul (1859) preceded. Of course, children have been studied since civilization began. Anthropological studies show that even savage tribes had made many observations of great value upon the characteristics of children. Savage rites and ceremonies point clearly to the fact that the period of adolescence (q.v.), for example, has always been of peculiar interest. Various writers and philosophers from Plato to Shakespeare have singled out child life for study and have recorded many critical observations. Poets have always found the dawn of life a theme for song. But it remained for the scientific age following Darwin, Huxley and Spencer to develop a real science of child life.

There are two classes of child study, the scientific and the practical. From the scientific standpoint, child study gathers a great deal of data from biology, embryology, anthropology, medicine, sociology, religion and ethics, as well as from physiology, psychology and pedagogy. From these data an attempt is made to draw scientific conclusions and discover scientific principles upon which the rational training and education of the child may be based. From the psychic point of view child study is almost synonymous with genetic psychology (q.v.). It includes an examination of all processes of change or metamorphosis through which the mental powers have passed in reaching the status they possess in a normal individual of civilized races. It seeks not only knowledge of the various intellectual, emotional and volitional phenomena, but it also seeks the genesis and development of these in the human races. With this view, child psychology requires for its complete understanding not only a study of the characteristics of children, but also a study of adolescent, adult and senile life. Not only man but lower animals in so far as such studies can throw light upon the present physic life of man.

But the field of child study, as above noted, comprises more than the psychological aspects of childhood. Teachers and parents are interested in anything that affects the child's growth, health and ability to work. 'Hence for the teacher, anthropological studies like those of Bowditch, Boas and Key may be as important as psychological studies, and investigations in pathology like those of Cohn may be of as direct practical value as studies in the mental didactics. Hence child study as a department of pedagogy includes every investigation and observation of children that has any relation to education.' (Burnham, Ped. Sem. 2, 191.)

## CHILD STUDY.

From the practical side, child study is concerned with the recognition and application of all principles relating to the care and training of children. These principles may have been gleaned from child psychology, from general psychology, from medicine, or any other science, or they may have been reached by purely empirical methods. But it must be remembered that child study in the school or in the home is concerned with the practical ways of dealing with children and not with the advancement of the science as such. The study is, as Burnham says, primarily for the sake of the child, secondarily for the 'sake of the teacher, and incidentally for the sake of science.' The rank and file of teachers and parents ought not to expect to add much to science by observation of children. The results that properly accrue from suggestions and observations ought to be attended with a greater interest in children, a more intelligent understanding of them, and better methods of dealing with them, but it is delusive to expect much of scientific value from such procedure.

Important scientific contributions have been made on a great variety of topics. Among them the following are typical: The growth and health of school children by Boas, Peckham, Bowditch, Key, Malling-Hansen, Hertel; Virchow's study of the color of the hair, skin and eyes of more than 6,000,000 German school children; Cohn's tests of the eye-sight of 10,000 school children; many studies of defective hearing; studies in motor ability by Bryan and by Hancock; a study of from fundamental to accessory by Burk; Baldwin's bashfulness in children; Balliet on manual training; Earl Barnes on the theological life of a California child; H. C. Bolton's counting-out rhymes of children; Binet on sensibility; T. L. Bolton on growth of memory in school children; Hall's book on adolescence; Chrisman on the secret language of children; Dresslar on fatigue; Gross on the play of children and of animals; Galton on imagery; Hall's studies of dolls, children's lies, contents of children's minds on entering school, crying and laughing, fears, religious experiences, migrations, truancy, reverie, institutional activities of children; Johnson's education by play and games, and rudimentary society among boys; Mumford's survival movements; Porter's physical basis of precocity and dulness; Robinson's Darwinism in the nursery; Scripture's tests of various abilities and reactions of school children; etc. The foregoing indicate the wide range of topics covered and the high standing of child study investigators.

Various methods have been employed. One is the wholly incidental empirical method of studying either single individuals or groups. Another is the observation and study of large numbers either by questionaires or class tests. Again there is the carefully planned experiments upon individuals. Least has been done by still another method, that of making observations and careful records upon individuals and classes through a long

series of years. There is now great need of this kind of most valuable work.

Child study has exerted a most beneficial influences upon all education in the school, in the home, and in the community;—witness the mothers' clubs, mothers' congresses, women's leagues for better conditions in school buildings, teachers' clubs, associations, reading circles, the increase and improvement of public libraries, traveling libraries, extension courses, the development of sewing classes, cooking schools, schools of domestic science, etc. There are at present many state organizations for chil l study, many more city organizations, and hundreds of local clubs. Every great university and most of the colleges have courses in child study in the departments of education. Even conservative Oxford and Edinburgh have furnished lecturers upon the subject. It has found its way into India, China, Japan, and the Hawaiian Islands. Thousands of parents are studying their children with the minutest care in the hope of better contributing to their education. There are probably 300,000 women, exclusive of teachers, actively engaged in some form of enterprise looking directly to the betterment of educational methods and facilities. These women are among the leaders of their respective communities. Their work takes various directions. Some of it is in mothers' clubs; others in parents' and teachers' meetings. In some, child study as ordinarily thought of is the central topic; in others the kindergarten, hygiene, foods and their relative value, general health, sleep, fatigue, home lessons, care of teeth, care of body, clothing, exercises, effects of tobacco, school room sanitation, school room direction, manners, morals, etc. Though much of the work is desultory yet it all contributes toward a closer bond of sympathy between home and school and to the betterment of education.

Much work of a practical nature still remains to be done. Students of the child must take up such questions as the cigarette habit, the nickel library, how to utilize gangs in righteous club work, how to secure medical treatment for suffering school children, induce proper hours of sleep and recreation, secure model playgrounds, prevent nervous break-down, remove temptations, provide wholesome occupations, amusements, etc. There must be a joining of all the forces of society in the cause of the child. Not alone the school and the teacher, but the home, the pulpit, the press, physicians, lawyers, city officials, legislators and judges, must all unite in this great work. There must be developed better child labor laws, juvenile courts established, juvenile offenders segregated from confirmed criminals, compulsory educational laws for every state, better schools, more and better playgrounds, more opportunities for wholesome individual and social activities of children.

*Bibliography.*—The following are among the most important books in child study: Adler, *The Moral Instruction of Children;* Baldwin, *Mental Development;* Chamberlain,

*The Child and Childhood in Folk Thought*, and *The Child: A Study in the Evolution of Man;* Forbush, *The Boy Problem;* Groos, *The Play of Man;* Hall, *Adolescence: Its Psychology and Its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion and Education;* King, *The Psychology of Child Development;* Kirkpatrick, *Fundamentals of Child Study;* Moore, *A Study of a Child;* Oppenheim, *The Care of the Child in Health*, and *The Development of the Child;* Perez, *The First Three Years of Childhood;* Preyer, *The Development of the Intellect*, and *The Senses and the Will;* Rowe, *The Physical Nature of the Child;* Shinn, *The Biography of a Baby*, and *Notes on the Development of a Child;* Starbuck, *The Psychology of Religion;* Sully, *Children's Ways*, and *Studies of Childhood;* Tanner, *The Child: His Thinking, Feeling and Doing;* Taylor, *The Study of the Child;* Tracy, *The Psychology of Childhood;* Warner, *Mental Faculty, The Nervous System of the Child*, and *The Study of Children.*

To comprehend the breadth of the field, to know of the vast output of splendid literature on the subject one should consult Louis N. Wilson's annual bibliography of the subject, published in the *Pedagogical Seminary*, which is edited by President G. Stanley Hall of Clark University, Worcester, Mass.

CHI-LI, or CHIH-LI, China: one of the 18 provinces into which the country proper is divided. The old name for this province was Pe-Chi-Li, and is even now frequently used by foreigners and by map-makers, but the Chinese use the name Chi-Li, which means 'Direct Rule,' so called because the imperial capital is situated in the province. It has an area of 58,949 square miles and is bounded north by Mongolia, east by the gulf called Pe-Chi-Li, and by the province of Shang-Tung, and west by the province of Shan-Hsi. Chi-Li is in many respects the most important of the Chinese provinces, containing as it does the imperial capital, Peking, the treaty port of Tien-Tsin, and the only completed line of railway in the empire. The Great Wall runs across the whole of the northern part of Chi-Li, while on the coast are the forts of Taku, and the nearest approach to a naval station belonging to the Chinese government. The province is mountainous and traversed by important rivers, notably the Pei-Ho, the Lan, the Ho-Kien, and the Hu-to. The Yu-Ho is especially important because of the canal system developed throughout its course in Chi-Li. Chi-Li is divided into 11 Fu or departments, 6 Chi-Li-Chou or sub-departments, each sub-divided into prefectures, with the rank of Ting, Chou or Hien. The provincial administration is in charge of a vice-roy (Tsoung-tou) and a Fou-youen or sub-governor. There are numerous towns of the first, or Fu, class, second, or Chou, class, and third, or Hien, class. These towns are surrounded by walls. In 1900 the population was estimated at 25,000,000. They are generally engaged in commerce, Chi-Li having much communication with Russia by way of Siberia.

Longitude West from Greenwich.
70°
65°
60°
55°
BOLIVIA
CHILE
ARGENTINE REPUBLIC
PARAGUAY
URUGUAY
PACIFIC OCEAN
ATLANTIC OCEAN
Tacna
Arica
Guallatiri
22,000 ft.
Pisagua
Iquique
Patillos
Cobija
Mejillones Bay
Antofagasta
Mt. Tuyayacu
17,000 feet
Point Grande
Taltal
Chanaral
Caldera
Copiapo
Tinogasta
Coquimbo or La Serena
Ovalle
Illapel
Petorca
Quillota
VALPARAISO
SANTIAGO
(60°)
Rancagua
S. Fernando
Curico
Constitucion
Talca
Linares
Cauquenes
Concepcion
Chillan
Antuco Vol.
16,000 ft.
Arauco
Los Angeles
Lebu
Angol
Mocha I.
VILLA RICA VOL.
15,396 ft.
Valdivia
Osorno
Llanquihue Lake
Port Montt
Calbuco Vol.
San Carlos
CHILOE
Castro
ISLAND
Corcovado Vol.
8,000 feet
Chubut
Oruro
Aullagas Lake
Rio Mizque
Mizque
Grande
S. Jose
Vallegrande
SUCRE OR CHUQUISACA
(60°)
9,333 feet
Potosi
Pomabamba
Camargo
Tupiza
Tarija
Ascotan
Inuya
Oran
Incaguasi Mt.
Santa Barbara
Jujuy
Rivadavia
Salta
Miraflores
Santa Maria
Tucuman
Catamarca
Santiago
Vinchina
Rioja
Jachal
Cattuna
Chepes
San Juan
Aconcagua Vol.
23,910 ft.
Tupungato Peak
21,000 ft.
Villa Nueva
San Luis
Rio Cuarto
Rosario
Lake Bebedero
Pergamino
Lincoln
(74°)
Bragado
Trenel
Paz
Fort Cuarto
Division
Poilague
Quentinal
Curahue
Trenque Lauquen
Azul
Tandil
Gen. Acha
Urre Lauquen
(Bitter Lake)
Juarez
Mar del Plata
Bahia Blanca
Blanca Bay
Valchitas
Colpe Salina
Lake Nahuel-Huapi
Lake Ichusguin
Nielo Lake
Michinmadiva Vol.
8,000 feet
Anegada Bay
Carmen
BAY OF SAN MATIAS
SAN JOSE
PENINSULA
Nuevo Gulf
Tarija
Tartagal River
Pilcomayo
Bermejo R.
Villa Formosa
Pilcomayo
Paraguay
Apa River
Concepcion
Tarjuary
MARSH OF XARAYES
Miranda
Fuerte Olimpo
SERRA AMAMBIHY
Miles
River
Grande I.
Cataract of Guayra
San Pedro
ASUNCION
(70°)
Villa Rica
Paraguari
Yguazu
R.
Pilar
Humaita
S. Maria
Corrientes
Lake Malaya
San Xavier
Candelaria
Iberá Lake
Mercedes
Goya
Parana
Gualeguay
Gualeguaychu
SERRA GERAL
Rio Pardo
S. Rosa
La Paz
Concordia
Salto
Bage
Camacuan R.
LAKE DOS PATOS
Pelotas
Rio Grande do Sul
Lake
S. Fructuoso
Paysandu
Villa de Cerro Largo
Negro R.
Victoria
Uruguay
Soriano
Florida
Colonia
S. Jose
Rocha
Cape S. Maria
Merim
Cebollati R.
Maldonado
MONTEVIDEO
(67°)
BUENOS AIRES
R. La Plata
RIO DE LA PLATA
Bay of Samborombon
Cape S. Antonio
Dolores
Cape Corrientes
Salado
Quinto R.
Cuarto R.
Tercero R.
Chadileufu
Colorado
Negro
Limay
Rio Chico
Rio Santa Cruz
Rio Coig
Rio Gallegos
Rio Chico
Rio Chubut
Rio Deseado
Rio Senguerr
Rio Chico
Rio Lake
Rio Pico

## CHILI.

CHILI, *chĭl ē* (locally CHILE, *chē'lā*:) republic in S. America, on the w. coast, between the summit of the Andes and the Pacific Ocean; bounded n. by Peru, e. by Bolivia and the Argentine Republic, w. and s. by the Pacific Ocean; since 1881 also including the coast strip between lat. 23° and 25° s., formerly belonging to Bolivia, the former Peruvian province of Tarapacá, and the larger part of Tierra del Fuego; extreme length about 2,500 m., breadth 40-200 m.; 279,901 sq. m.; pop. (1885) 2,524,476; est. (1901) 3,146,570; cap. Santiago (1901) 296,690.

*Topography.*—The Andes extend in two parallel lines through nearly the entire length of C., and between these ranges is a central valley or table-land, with greatest breadth 33°—40° s. lat. The principal streams are the Maipu, which waters the valley of Santiago; the Máule; the Biobio (q.v.), the largest river in the country; the Cauten, or Rio Imperial; the Bueno; and the Callecalle, or Rio de Valdivia (100 m.), the most important of all, because of the sheltered harbor at its mouth. In the s. are many deep lakes, such as Llanquihue (30 m. long by 22 broad) and Ranco 32 m. by 18). Mineral waters, chiefly saline and sulphureous,are abundant;the principal spa is at Chillan (q.v.). The most important islands are those constituting the province of Chiloé (q.v.); Juan Fernandez (q.v.) also belongs to C. Owing to its great extension from n. to s., C. comprises regions of very different nature and climate. The north provinces, Tarapacá, Atacama, and part of Coquimbo are arid, rainless districts where the principal industry is mining and extraction of saltpetre. The middle and southern provinces—viz. Aconcagua, Valparaiso, Santiago, Colchagua, Curicó, Talca, Linares, Máule Nuble, Concepcion, Arauco, Biobio, and Valdivia—are agricultural and viticultural, and have also valuable coal-fields. The Patagonian region is densely wooded and sparsely inhabited by a few Indians.

*Climate.*—The climate of C. is temperate. In the n. it is moderately hot and rainless, but banks of clouds always hang overhead, and heavy dew falls at night. In the s. it is dry for about eight months of the year, and rainy the other four. The temperature is remarkably even and pleasant, and always cool at nights. The s. wind blows fiercely during many days of summer dry and cold, the n. wind brings heat, tempest, and rain; other winds are unknown.

*Agriculture.*—In s. C. generally the land is poor and of hardly any value for agriculture, which, indeed, is carried on in a very primitive fashion; but the soil of the valleys, where large herds of cattle graze, is very fertile. Vines, also, grow well on the hillsides, and the wines of the country are superseding in Chili the French red wines. The Andes are almost everywhere visible, covered with perpetual snow.

*Manufactures.*—Since the acquisition of the territory of the Araucanian Indians (1881) the govt. has been anxious to attract European emigrants, but British adventure in that direction has been deprecated. There is practically

no demand for foreign mechanics, and the manufactures, properly so called, are confined to copper-smelting, sugar refining, tanning, brewing, manufactures of soap and candles, biscuits, boots and shoes, woolens, flax, and nitrates. A special effort has been made to introduce new manufacturing industries which will be protected by tariff.

*Commerce.*—The annual value of imports is $106,260,000; of exports, $163,106,000; a third of the imports and two-thirds of the exports were British, the German and French trade being next in importance. Mineral products represented five-sixths of the total exports. The chief articles of export were nitrate and iodine, copper, silver, gold, manganese, hides, wool, wheat, and barley. The principal imports were cotton, woolen, and jute goods, iron, hardware, coal, machinery, timber, rice, sugar, earthenware, cement, paper, beer, glassware, kerosene, tallow, matches, tea and coffee.

*Railroads and Telegraph.*—The railway system of C. is well developed. A govt. broad-gauge line runs from Valparaiso to Santiago, crossing the coast-range of the Andes, and thence southward through the central valley to Concepcion, and through Araucania toward Valdivia, making a total length of about 1,500 m. A branch from the Valparaiso and Santiago line also runs to Santa Rosa, at the foot of the Andes, from which a projected line unites with the Argentine railway system, *via* the Uspallata Pass, which it crosses at the elevation of 9,843 ft. above sea-level by means of a tunnel 6¼ m. in length, and affords through communication from the Pacific to the Atlantic oceans. The aggregate mileage of railroads in operation is over 2,800; mileage of telegraph system, 11,080. The post-office handles over 57,000,000 packets annually in the inland service, and over 10,000,000 international.

*Religion and Education.*—The established religion of C. is Rom. Cath., but public opinion is now very liberal, and other religions are tolerated. Education receives much attention, is gratuitous and at the cost of the state, but is not compulsory. There are 1,960 public primary schools, with 166,928 pupils, an average attendance of 108,582, and 3,608 teachers. There are normal schools for men and also for women at various centres, schools of mining, commercial institutes and a national institute. There is a first-class university at Santiago, and a lyceum in every provincial capital.

*Finances.*—The financial position of C. has been in general satisfactory, and its credit has stood higher than that of any other S. American state. The foreign debt amounts to about $82,249,800, and the internal debt to $20,500,000. The annual revenue is estimated at about $122,400,000, and the expenditures at $106,000,000. The principal items of expenditure are finance, marine, railways, interior, instruction, and war.

*Army and Navy.*—According to the milit. law of 1887 the standing army is limited to 940 officers of all grades and 5,885 men; and the national guard to 48,670 officers and men. The Chilian navy comprises 1 iron-clad battle-

ship, 3 belted cruisers, 4 protected cruisers, 3 torpedo gunboats, 6 destroyers, and 8 modern torpedo boats.

A law of 1900, Sept. 5, makes military service obligatory on every Chilian capable of bearing arms from 18 to 45 years of age. Chili has a war academy, a school of military engineering, military and naval schools.

*Government.*—The national Congress is composed of two chambers: (1) The chamber of senators, with 32 members, elected for a term of six years by direct vote and by provinces, in the proportion of one senator to each three deputies; (2) the chamber of deputies, with 94 members, elected for a term of three years. Congress exerts a certain amount of control over the president of the republic by giving or refusing its confidence to the cabinet ministers appointed by him—as illustrated in the contest with Balmaceda. To represent Congress in the period of its recess, there is a Permanent Committee of 14 members, one-half chosen by each chamber.

The president of the republic holds office for five years, and he cannot be re-elected for the next consecutive period. A council of state, composed of 11 members, some of whom are appointed by the president, and others by the chambers, has the power to intervene in certain appointments, and its consent is necessary for the promulgation of the laws, the granting of pardons, and some other matters. This council is not to be confused with the cabinet, in which are but six ministers or secretaries, to wit: The minister of the interior; of foreign affairs; Church and colonization; of justice and public instruction; of war and the navy; of the treasury; of industries and public works.

The judicial branch of the government comprises: The supreme court of justice, located at Santiago, and composed of seven members, with authority over all other tribunals of the republic; the court of appeals for the great districts of Tacna, Serena, Valparaiso, Santiago, Talca, and Concepción; one or more justices of the peace in each department of the republic; and sub-delegation or minor district judges. Juries exist only for suits involving the question of abuse of the freedom of the press.

For the purposes of political government, Chile is divided into 23 provinces and one territory. The provinces are divided into departments, the departments into sub-delegations, and the latter into districts. For the purposes of local administration, the republic is divided into municipal circumscriptions, or communes, one for each 20,000 inhabitants. A list of the provinces follows, beginning at the north: Tacna, Tarapacá, Antofagasta, Atacama, Coquimbo, Aconcagua, Valparaiso, Santiago, O'Higgins, Colchagua, Curicó, Talca, Linares, Maule, Ñuble, Concepción, Bio-bio, Arauco, Malleco, Cautin, Valdivia, Llanquihue, and Chiloé. The territory referred to above is Magallanes, at the southern end of the continent.

*History.*—The first European to land in Chili was the Portuguese discoverer Magellan, after his voyage through

Magellan strait. He landed at Chiloé, 1520. After the conquest of Peru by Pizarro, an expedition was made to Chili from that country overland under the leadership of Diego de Almagro 1535. This expedition penetrated as far as the Rio Clano, but returned unsuccessful. Another was sent under command of Pedro Valdivia 1540, which succeeded in annexing the territory as far as the river Maipu. Santiago, the capital, was founded by Valdivia 1542. During the colonial period the governors of Chili were appointed by the viceroys of Peru. In 1810 a revolt against the Spanish power broke out, in which Don Bernardo O'Higgins, son of one of the last viceroys of Peru, but a native of Chili, played a conspicuous part, and finally became the first dictator of the new republic. The conflict between the Spanish troops and the republican army continued till 1826, when peace was definitely settled, and Chili left to govern itself. The first constitutional pres. was Gen. Blanco Encalada. The govt. was unsettled till 1847. A revolution broke out 1851, but since then there has been no serious attempt to overturn the govt. by force of arms. In 1864 Chili gave Peru valuable support in her war with Spain. Valparaiso was bombarded by the Spaniards 1866. In 1879 Chili declared war against Bolivia, and immediately thereafter against Peru, with which Bolivia was allied. For a time the Peruvian fleet kept the Chilians in check, but 1879, Aug., the Peruvian iron-clad *Huascar* was captured by the Chilian men-of-war *Cochrane* and *Blanco Encalada*, both armor-plated. After this event the success of the Chilians was uninterrupted. Peruvian towns were bombarded, and their other warships captured. Finally Lima was taken by storm 1881, June 23. The Chilians occupied Lima and Callao till 1883, Oct. 30, when a treaty of peace was signed. By this a portion of Peruvian territory (see above) was ceded to Chili.

A revolution against Pres. Balmaceda broke out 1891, Jan., and, through the defection of a large part of the army, the navy, and the congress, spread rapidly. The insurgents captured several important cities; a patriotic junta was formed; the pres. decreed the election of a new congress, which he opened in person Apr.; an act authorizing the pres. to levy a forced loan of $20,000,000 to put down the revolution was passed; several land and naval battles were fought; a decisive engagement occurred before Valparaiso Aug. 21, which continued till the 23d, when the Balmacedists gave way; the insurgents took possession of Valparaiso 28th and of Santiago 30th; and Balmaceda killed himself Sep. 19. Municipal and legislative elections were held Oct. 18; a new congress was opened Nov. 2; and Admiral Jorge Montt, candidate of the liberal party, was elected pres. Nov. 6.

In the early part of the revolution the congressional party or anti-Balmacedists bought munitions of war in the United States. A part reached C. in time for use, but

the largest consignment was shipped from San Francisco on an American vessel (Apr.), and subsequently transferred to the congressional transport *Itata*, which put to sea, carrying off a U. S. deputy-marshal, who had been placed in charge of the vessel after its seizure by a U. S. marshal. The *Itata* put the deputy on a pilot-boat, and steamed seaward. The act occasioned a diversity of opinion among the authorities at Washington, but within a few days the new cruiser *Charleston* was ordered to pursue the *Itata*, and the cruiser *San Francisco* was ordered to Chilian waters to intercept the fugitive. Fearing international complications, the congressionalists offered to surrender the *Itata* to the U. S. admiral on her arrival at Iquique, and did so. The *Itata* returned to San Diego, Cal., where a libel against the steamer was dismissed by the U. S. district court on the ground that, as the provisional govt. of the congressionalists had not been recognized as a belligerent, its agents had not violated the U. S. neutrality laws. From this decision the U. S. govt. appealed to its supreme court.

The affair of the *Itata*, and persistent allegations that the U. S. minister to C. had been unduly anxious for the success of the Balmacedists, created in the principal cities of C. a feeling of hostility against the United States. On Oct. 16, while a number of the crew of the U. S. S. *Baltimore* were on shore leave in Valparaiso, they were set upon by a party of Chilian sailors in a saloon, and when the Americans sought refuge in street cars they were assaulted with knives and other weapons and dragged to the street. A riot ensued, in which one American sailor was killed, one was so severely injured that he died soon afterward, 5 received dangerous stab wounds, and 15 others were slightly wounded. The police arrested 3 Chilian and 36 U. S. sailors for participation in the riot. The U. S. govt. promptly demanded an explanation and reparation, and extensive naval preparations to support the demands were made. After much correspondence Chili formally apologized for the assault on the American sailors, 1892, June 23, and voluntarily paid an indemnity of $75,000 for the victims of the riot, July 13 following.

CHILIAD, n. *kĭl'ĭ-ăd* [Gr. *chīlĭăs*, a thousand]: a thousand; a thousand years; the millennium. CHILIAGON, n. *kĭl'ĭ-a-gŏn* [Gr. *gōnia*, an angle]: a plane figure of a thousand sides and angles. CHILIAHEDRON, *kĭl-i-a-hēd'rón* [Gr. *hedra*, a seat, a side]: a plane figure contained by a thousand sides. CHILIARCH, *kĭl'ĭ-ârk* [Gr. *archos*, a leader]: the general or commander of a thousand men. CHILIAST, *kĭl'ĭ-ăst* [Gr. *chiliastēs*—from *chilias*, a thousand]: a millennarian; one who believes in the doctrine of a literal millennial coming and reign of Christ in visible form upon earth: see MILLENNIUM.

CHILIASM, *kĭl'ĭ-ăzm:* doctrine of the personal reign of the visible Christ on earth during the millennium. Those holding this doctrine are called *Chiliasts;* and such views are termed *Chiliastic:* see MILLENNIUM.

CHILKAT, or DALTON PASS: a route in Alaska, formerly used by J. Dalton, a trader, as a pack train route and for driving cattle, but later by miners to reach the gold fields of the Klondike. This pass follows a direct course, more or less independent of waterways, from Chilkat Inlet to Fort Selkirk; crosses the Chilkoot Pass, and joins other routes at Fort Selkirk; and is preferred because it is less difficult than the road over CHILKOOT PASS (q.v.).

CHILKOOT PASS: a difficult pass over the mountains in the n. part of Alaska, which was traversed by thousands of gold-seekers in 1897-98. It is the most direct route to Dawson City, the starting point to the Klondike region, and the shortest to the Yukon district. The difficulties and dangers attending the route are many, and the steepness and roughness of the ascent have proved fatal in many instances. Early in 1898 an aerial railway was completed over the pass to Lake Linderman, which shortens the time from a month to a day, and removes the perils and hardships of former travel. The pass was formerly the old trail used for generations by the Indians, and for many years was the only one taken by miners and prospectors to reach the interior.

CHILLAN, *chēl-yân':* town of Chili, cap. of the province of Nuble, between the Nuble and Chillan rivers, about 120 m. n.e. of Conception; lat. 35° 56′ n., long. 71° 37′ w. It was founded by Ruiz de Gamboa 1594, devastated by the Moluche Indians, 1601, by the Puelches and an earthquake 1657, again by an earthquake 1751, and by an inundation 1797. Removed after the last disaster to La Horca, it was overthrown by another earthquake 1835, and rebuilt on its present site 1836.

CHILLIANWALLA, *chēl-yân-wâl'la:* village of the Punjab; 5 m. from the left or e. bank of the Jhelum, the most westerly of the five rivers which give name to the country. It is in lat. 32° 40′ n., and long. 73° 39′ e.; 85 m. n.w. of Lahore. C. claims notice as the scene of Lord Gough's dearly-won victory, over the Sikhs, 1849, Jan., also as the site of an obelisk erected to the memory of those who fell in the two Sikh wars.

CHILLICOTHE, *chĭl-lĭ-kŏth-cē:* city, cap. of Livingston co., Mo.; 76 m. e. of St. Joseph, 130 m. w. of Hannibal, 95 m. n.e. of Kansas City, and abt. 3 m. n.e. of Grand river, on the Hannibal and St. Joseph railroad at the junction with the C. and Omaha Branch railroad and the Brunswick and C. railroad. It is the principal city in the Grand River valley, is near the noted health resort Laurel Mineral Springs, and is the seat of the State Industrial School for Girls, C. Normal school, state hospital, and St. Mary's hospital. It has farming, dairying, stock raising, lumber and coal-mining interests, some manufactures, electric lighting, and street railroads. Pop. (1910) 6,265.

CHILLICOTHE, *chĭl-lĭ-kŏth'ē:* city, cap. of Ross co., Ohio; on the right bank of the Scioto river, the Ohio and Erie canal, the Norfolk and Western, the Baltimore and Ohio Southwestern, and the Cincinnati, Hamilton and Dayton railroads; 50 m. s. of Columbus, and 96 m. n.e. of Cincinnati. It is pleasantly situated in Scioto valley, inclosed by hills nearly 500 ft. high. Paint creek borders it on the s. and flows into the Scioto river, 3 m. below. C. was founded 1796, by Nathaniel Marrie and emigrants from Ky., and was soon thickly settled with Virginians. Nathaniel Willis, grandfather of N. P. Willis, established here, Apr. 25, 1800, *The Scioto Gazette,* which has been published continuously longer than any paper n.w. of the Ohio river. C. was the first capital of the state, 1800–10, and again from 1813–16, Zanesville being the capital 1811–12. In 1903 the centenary of Ohio as a state was fittingly celebrated at C. The city has 6 wards and is governed by a mayor and 12 councilmen. The streets are wide and regular, and have electric railroads and lighting. A court-house which cost $100,000, a fine public library, school houses, and handsome churches are among the principal buildings. C. is in a farming and coal-mining region, is a busy trade centre, and besides the repair and construction shops of the Baltimore and Ohio Southwestern railroad has manufactures of engines, agricultural implements, furniture, paper, shoes, flour, etc., and municipal waterworks. Pop. (1890) 11,288; (1900) 12,970; (1910) 14,508.

CHILLIES, n. plu. *chĭl'lĭz* [Sp. *chili*]: the pods of the Cayenne or Guiana pepper; a general name for all the different species and varieties of *Capsicum* (q.v.).

CHILLINGWORTH, *chĭl'ĭng-wėrth,* WILLIAM: 1602—1644, Jan.; b. Oxford: theologian of the Church of England. He was educated at Trinity College, Oxford, where the arguments of a Jesuit named Fisher induced him to become a Rom. Cath. He withdrew to Douay; but was induced by his godfather, Dr. Laud, then Bp. of London, to re-examine the whole controversy between Rom. Catholics and Protestants, and in 1631 he returned to the Angelican Church. Four years later, he published a work, entitled *The Religion of Protestants a Safe Way to Salvation.* It was exceedingly keen, ingenious, and conclusive in point of argument. C. was perhaps the ablest disputant of his age, and had there not been a certain fickleness and want of solidity about his intellect, and a nervous suspicion that all human reasoning might be vitiated by undiscovered fallacies, he might have produced a really great work. *The Religion of Protestants* acquired a wide popularity. C. was offered church preferment, which he at first refused—having certain scruples in regard to the subscription of the 39 articles—but afterward accepted. He became chancellor of the Church of Sarum, and prebendary of Brixworth, in Northamptonshire. He was a strong royalist, and on the breaking out of the civil war, accompanied the king's forces,

CHILLON, *shĭl'lon*, Fr. *shē-yōng'*: celebrated castle and fortress of Switzerland, canton of Vaud, 6 m. s.e. of Vevay. It is at the e. end of the Lake of Geneva, on an isolated rock, almost entirely surrounded by deep water, and connected with the shore by a wooden bridge. The castle is said to have been built 1238, by Amadeus IV. of Savoy, and it long served as a state prison. It is famous as the prison of Bonnivard, the prior of St. Victor, who having, by his efforts to free the Genevese, rendered himself obnoxious to the Duke of Savoy, was carried off by emissaries of that potentate, and confined here for six years, at the end of which time the castle had to surrender to the Bernese and Genevese, when Bonnivard was liberated. C. has been immortalized by Byron's *Prisoner of Chillon*. The castle is now used as a magazine for military stores.

CHILMAREE, *chĭl-mâ'rē*, or CHALAMARI: town of British Indian, presidency of Bengal, on the right bank of the Brahmaputra, 35 m. s.e. of Rangpur. It is prettily situated but ill built, and is the seat of a religious and commercial festival at which 60,000 to 100,000 persons come together.

CHILOE, *chē-lō-ā'*: the insular province of Chili (q.v.): an archipelago on the w. side of S. America, named from its principal island. It is separated from the rest of the republic, or rather from Patagonia, by the Gulf of Ancud, extending in s. lat. 41° 40′ to 43° 20′, and in w. long. 73° to 74°. The province contains, in addition to C. proper, about 60 islets, of which about 30 are uninhabited. In the archipelago are two towns, both of them seaports of C. proper—Castro, the aecient cap., on the e. coast, and San Carlos, the modern seat of government, toward the n.w. extremity. The atmosphere, like that of the mainland opposite, is excessively moist; the westerly winds, particularly in winter, bringing almost constant rains. The climate, however, is, on the whole, healthful. This fact is the more remarkable, inasmuch as C. proper is one natural forest, measuring 100 m. by 40, with a partially cleared and cultivated margin on the sea. The chief products are wheat, barley, potatoes, apples, and strawberries; and cattle, sheep, and pigs are reared in considerable numbers. Agriculture, however, is very primitive; and the staple food of many of the inhabitants consists of mussels and oysters. The population, equally indolent and poor, differs from that of the rest of Chili in the great preponderance of aboriginal blood. Schools are numerous, but, from the ignorance of the teachers, education has not made satisfactory progress. The principal manufacture is a coarse woolen cloth, dyed blue. This archipelago was discovered by the Spaniards as late as 1558; and, as it was the last integral portion of Spanish America to be colonized, so also was it the last to throw off the mother country's yoke. **Pop. 78,000.**

CHILOGNATHA, n. plu. *kī'lŏg-nā'thă* [Gr. *cheilos*, the lip, the snout of an animal; *gnathos*, a jaw]: order of the Myriapoda (q.v.): the centipedes. CHILOPODA, n. plu.

*kī-lŏr'ō-dă* [Gr. *podēs*, feet]: order of the Myriapoda (q.v.): the millepedes.

CHILTERN HILLS: s. part of the low chalk range which runs n.e. about 70 m., from the n. bend of the Thames, in Oxfordshire, England, through Bucks and the borders of Herts and Beds, and ends in Norfolk and Suffolk. In Oxford, Herts, and Beds, the C. H. are 15 to 20 m. broad, and the highest points are Wendover, 905 ft., and Whitehouse, 893.

CHILTERN HUNDREDS, n. plu. *chĭl'tėrn hŭn'drĕdz:* a hilly district in Buckinghamshire and Oxfordshire belonging to the crown, having a nominal office attached to it, called the 'stewardship of the Chiltern Hundreds.' In former times, the beech forests which covered the Chiltern Hills, were infested with robbers, and in order to restrain them, and protect the peaceable inhabitants of the neighborhood from their inroads, it was usual for the crown to appoint an officer, who was called the steward of the C. H. The office which has long ceased to serve its primary, now serves a secondary purpose. A member of the house of commons cannot resign his seat unless disqualified either by the acceptance of a place of honor and profit under the crown, or by some other cause. Now, the stewardship of the C. H. is held to be such a place, and it is consequently applied for by, and granted, in the general case as a matter of course, to any member who wishes to resign. As soon as it is obtained, it is again resigned, and is thus generally vacant when required for the purpose in question. When the stewardship of the C. H. is not vacant, however, the same purpose is served by the stewardship of the manors of East Hendred, Northshead, and Hempholme. As to the offices which are held to vacate seats, see ELECTION. The practice of granting the C. H. for the purpose above described began only about the year 1750, and its strict legality has been doubted, on the ground that the stewardship is not an office of the kind requisite to vacate a seat. The gift of the C. H. lies with the chancellor of the exchequer, and there is at least one instance, 1842, of refusal of an application for it—the refusal being based on some very damaging disclosures of corruption made before a committee of the house of commons.

CHIMÆRA, n. *kī-mē'ră*, CHIMÆRIDÆ, n. plu. *kī-mē'rĭ-dē* [Gr. *Chimaira*, the Chimæra, a fabulous animal that spouted fire]: genus of cartilaginous fishes, ranked by Cuvier with the sturgeon (*Sturionidæ*), but now generally regarded as the type of a distinct family, of which only two or three species are known. The gills have a single wide opening, as in the sturgeons; but the gill lid or *operculum* is merely rudimental, and concealed in the skin, while there is an approach to sharks in the structure of the gills. The only known species of C. is *C. monstrosa*, occasionally found in the British seas, and more common in more northern latitudes. It is sometimes called the *King of the Herrings*. It pursues the shoals of herrings, and is conse-

quently sometimes taken in herring-nets. It is seldom more than three ft. long. Its general color is silvery

Chimæra Monstrosa.

white, the upper parts mottled with brown. It produces very large leathery eggs. CHIMÆROID, *kĭ-mē′royd* [Gr. *eidos*, appearance]: relating to the chimæridæ, or like them.

CHIMAPH′ILA: see WINTER-GREEN.

CHIMARA, *kē-mâ′râ*, or CHIMARI, *kē-mâ′rē*, or KHIMARA, *kē-mâ′râ:* modern name of the anc. Ceraunian Mountains.

CHIMBORAZO, *chĭm-bō-râ′zō*, Sp. *chēm-bō-râ thō:* conical peak of the Andes, in Quito, 21,510 ft. above the sea, but only about 12,000 above the level of the surrounding table-land. It is capped with perpetual snow, and was long regarded as the loftiest mountain in the world. Latterly, however, it has been ascertained to be overtopped by some peaks, not only of the Himalayas, but even of the central division of its own chain. The summit was for the first time reached by Stübel 1872. Humboldt ascended within 2,138 ft. of the summit. Whymper ascended twice in 1880, and found that there was a large glacier on the mountain.

CHIME, n. *chĭm* [imitative of a loud, clear sound: Fin. *kimia*, acute, sonorous: comp. F. *cymbale*—from L. *cymbălum*, a cymbal]: the musical harmony produced by striking a set of bells with hammers; a set of bells tuned to the musical scale, and struck by hammers either by the hands of performers or by mechanism: V. to sound in harmony or accord; to agree with; to cause to sound in harmony. CHI′MING, imp. CHIMED, pp. *chīmd*. CHIMING IN, keeping tune with; agreement.

CHIMERA, n. *kĭ-mē′ră* [L. *chimæra*, a monstrous beast: Gr. *chimaira*, a she-goat, a monster]: mythical monster, described by Homer as having a lion's head, a goat's body, and the tail of a dragon. The rationalistic account of C. is, that it represented a mountain in Lycia whose top was the resort of lions, its middle of goats, and the marshy ground at the bottom of which abounded with serpents. In the same manner, Bellerophon's (q.v.) victory over the

chimera is explained by saying that he first made his residence on this mountain. The myth seems, at all events, to have belonged to Asia Minor, as gigantic carvings of the chimera on rocks are there found. It is usually represented as a lion, out of the back of which grows the head and neck of a goat. Chimera is used figuratively to denote any monstrous or impossible conception, the unnatural and frightful birth of the fancy. It is frequently depicted on shields, as a heraldic charge. CHIMERICAL, a. *-mĕr'ĭ-kăl*, merely imaginary; vainly or wildly conceived; that can have no existence except in thought. CHIMER'ICALLY, ad. *-lĭ*.—SYN. of 'chimerical': imaginary; delusive; deceitful; fanciful; fantastic; wild; vain; unfounded.

CHIMERE, *shĭ-mēr':* 'the upper robe worn by a bishop, to which the lawn-sleeves are now generally attached.' In the English Church, since the time of Queen Elizabeth, it has been of black satin, but previously it was of a scarlet color, like that worn by the bishops when assembled in convocation, and when the sovereign attends parliament.

CHIMES, *chīmz:* music performed on bells in a church tower, or the set of bells thus used; the English word, like the Fr. *Carillons*, is used in both senses. The bells are struck by hammers moved either by clockwork or by hand; in the former case, pegs, placed at proper intervals, project from the circumference of a revolving cylinder, and are brought in contact with levers which operate on the hammers. *Carillons à clavier* are played by an attachment resembling the keyboard of a piano; the performer strikes with his fists the keys, which are connected with the bells by rods or cords. Strength as well as skill is required for this kind of playing; yet Pothoff, a blind organist of Amsterdam, could execute fugues on the bells, giving a force of 2 lbs. wt. to each key. The treble notes are struck by the hand in a leather covering, the bass by the feet on pedals which connect with the larger bells. Difficult as the performance is, some players can execute compositions consisting of three parts, and even produce trills and arpeggios. It is supposed that chimes began in German monasteries, and that the first instrument for producing them was made 1487 at Alost in the Netherlands. . Amsterdam has carillons in three octaves. The finest set of chimes are at Copenhagen and Ghent. These consist of from 40 to 50 bells, the largest weighing several tons, the smallest only a few pounds. Instead of bells, sometimes bars, wires, or tubes are used. Many churches in the United States now have them, chiefly Epis. and Rom. Cath.; the oldest probably are those of Christ Church, Philadelphia, which were presented by Queen Anne, sunk in the Delaware during the revolution to prevent their being taken by the British, and hung again after the war. Next come those of Christ Church, Boston, and Trinity, New York, the bells in the latter weighing each from 700 to 3,081 lbs., in all 15,000 lbs. The 10 of Grace Church, New York, aggregate 10,300

lbs. Chimes on a small scale have been applied to clocks and even to watches.

CHIMINAGE, n. *shĭm′ĭn-ĭj* [F. *chemin*, a road, way]: in *old law*, a toll paid for passage through a forest.

CHIMNEY, n. *chĭm′nĭ*, CHIM′NEYS, n. plu. *-nĭz* [F. *cheminée*, a chimney; It. *camminata*, a hall—from mid. L. *caminăta*, an apartment with a fireplace—from *camĭnus*, a hearth, a flue]: a funnel or passage upward in a wall for the escape of smoke or heated air. CHIMNEY-FLUE or VENT, the passage from the fireplace upward. CHIMNEY-SWEEP, one who cleans chimneys. CHIMNEY-PIECE, the frame of wood or stone forming two sides of a fireplace, and resting on the hearth.—The MANTELPIECE is the horizontal slab and overhanging shelf above the chimney-piece: see MANTEL. CHIMNEY-MONEY, n. in *old law*, a tax paid for each chimney in a house. This tax was imposed in the reign of Charles II., and abolished under William and Mary. CHIMNEY-VALVE, a device of Dr. Franklin's for withdrawing the foul air from a room by means of the upward draft in the chimney.

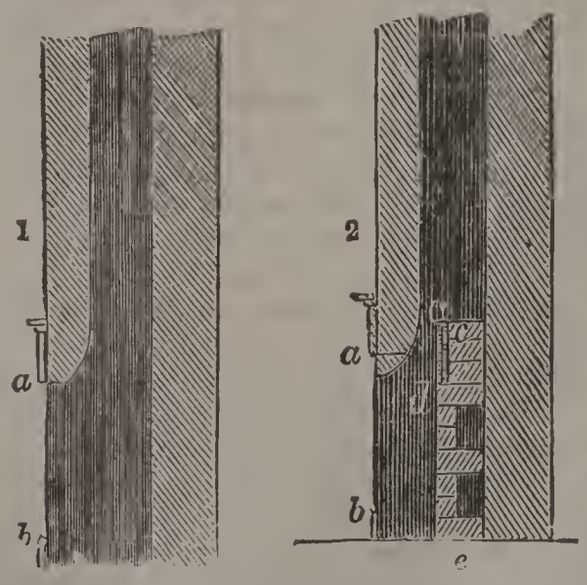
CHIMNEY: funnel from the earth or fire-place, leading above the roof of the house. There is reason to believe that the chimney is a modern invention. In Greek houses it is supposed that there were no chimneys, and that the smoke escaped through a hole in the roof. What the arrangement was in houses in which there was an upper story, is not known; perhaps the smoke was conveyed by a short funnel through the side-wall of the house, which seems to have been the first form of chimney invented in the middle ages. The Roman *caminus* was not exactly a chimney, but rather a sort of stove; and it has been a subject of much dispute, whether the Romans had any artificial mode of carrying off the smoke, or whether it was allowed to escape through the doors, windows, and openings in the roof. As the climate and the habits of the people both led to the houses of the ancients being very much more open than ours are, it is probable that the occasional fires which they had of wood or charcoal may have given them no great inconvenience. It is known, besides, that the rooms in Roman houses were frequently heated by hot air brought in pipes from a furnace below. In England, there is no evidence of the use of chimney-shafts earlier than the 12th c. In Rochester Castle (*circa* 1130), complete fireplaces appear; but the flues go only a few feet up in the thickness of the wall, and are then turned out through the wall to the back of the fire-place, the openings being small oblong holes. The earliest chimney-shafts are circular, and of considerable height. Afterward, chimneys are found in a great variety of forms. Previous to the 16th c. many of them are short and terminated by a spire or pinnacle having apertures of various shapes. These apertures are sometimes in the pinnacle, sometimes under it, the smoke escaping as from some modern manufacturing C.-stacks which

are built in the form of an Egyptian obelisk. Clustered chimney-stalks do not appear until late in the 15 c., when they seem to have been introduced simultaneously with the use of brick for this purpose. Each of the earlier clustered chimneys consist of two flues which adhere to each other, and are not set separate, as afterward was the practice. Long after they were invented and in use for other rooms, they were not generally introduced into their halls, which, till the end of the 15th, or beginning of the 16th c., continued as formerly to be heated by a fire on an open hearth in the centre of the hall, the smoke escaping through an opening in the roof known by the name of *louvre*.

The action of a chimney depends upon the simple principle, that a column of heated air is lighter than a cooler column of equal height; when therefore a flue full of heated air communicates freely by the lower part with the cooler air around it, the greater weight of the latter pushes the warm air upward, and thus an ascending current is produced. Other conditions being equal, the draught of a chimney will thus be proportional to its perpendicular height, and the difference between the temperature within and without it. The straighter and more perpendicular the chimney, the stronger will be the draught, because the friction of the ascending current will be less, and the cooling effect of a long or tortuous course will be saved. The maximum efficiency of a given chimney is attained when all the air that passes up it enters by the bottom of the fire. In this case, its temperature is raised to the uttermost by passing through the whole of the fire, and the fire is at the same time urged to vivid combustion by the blast thus obtained. A powerful furnace may be constructed by connecting a suitable fireplace, capable of being closed all round excepting at the bottom, with a tall chimney; and the amount of draught may be regulated by increasing or diminishing the aperture through which the air is admitted to the bottom of the fireplace, or by an adjustable opening above the fireplace, which, as its size is increased, will diminish the effective draught,.

When the fireplace can be inclosed thus, there is little liability to descending currents or 'smoky chimneys,' as they are called, even when the chimney is very short, or has a tortuous course. It is chiefly with open fireplaces that this defect occurs, and the means of prevention and cure is a subject of much importance. As with most other evils, the prevention is far easier than the cure; for by properly constructing the chimney in accordance with the principles above stated—by placing the opening of the chimney as nearly over the fire, and contracting the open space above the fire, as much as possible —downward smoking may in most cases be easily prevented. When a chimney is in the neighborhood of a wall or building nearly as high as itself; or—what is still worse—higher, it is apt to smoke on account of the eddies and other complex currents in the air, caused by the interfer-

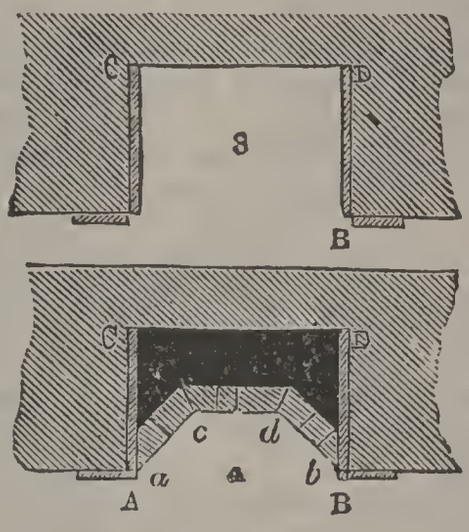
ence which such an obstacle presents to the regular movement of the wind. In towns, such tortuous movements of the atmosphere are very common, and the contrivances for preventing the wind from blowing down the chimneys are very numerous, and often grotesque. Revolving cowls of various forms, but alike in having a nearly horizontal outlet, which is so turned by the wind that the mouth shall always point in the direction opposite to that whence the wind is blowing, are the most common, and usually the most effectual. They are generally of sheet-zinc, with an arrow, a flattened pigeon, or other device, as a vane, to determine the rotation of the cowl. The curing of smoky chimneys, in conjunction with the economizing of fuel, was one of the favorite subjects of investigation of that very practical philosopher, Count Rumford. He says: 'Those who will take the trouble to consider the nature and properties of elastic fluids—of air, smoke, and vapor—and to examine the laws of their motions, and the necessary consequences of their being rarefied by heat, will perceive that it would be as much a miracle if smoke should not rise in a chimney—all hindrances to its ascent being removed—as that water should refuse to run in a siphon, or to descend a river. The whole mystery, therefore, of curing smoky chimneys is comprised in this simple direction: find out and remove those local hindrances which forcibly prevent the smoke from following its natural tendency to go up the chimney; or rather, to speak more accurately, which prevent its being forced up by the pressure of the heavier air of the room.'* He then goes on to speak of above 500 smoking chimneys that he has had under his hands, and which were supposed incurable, and states that he was never, obliged, 'except in one single instance, to have re-




course to any other method of cure than merely reducing the fireplace and throat of the chimney, or that part of it which lies immediately above the fireplace, to a proper form and just dimensions.'

* *Essays: Political, Economical, and Philosophical*, by Benjamin Count Rumford, vol. i. p. 299.

The figures illustrate his method of proceeding. Fig. 1 is a side view of a vertical section of a C. and fireplace before alteration; fig. 2, the same after the reduction of the fireplace and throat of chimney. *ab* is the opening of the fireplace in both; this is lowered by the piece at *a*, fig. 2, and the depth diminished by the brickwork, *ce*, behind; *cd* is a movable tile, to make room for the C.-sweeper. Figs. 3 and 4 are plans of the fireplace, looking down upon the hearth; the original opening of the fireplace is shown by




ACDB, fig. 3; the contracted opening, by *acdb*, in fig. 4. The dark space is filled with rubbish and faced with brickwork.

The slope of *ac* and *bd*, fig. 4, is better adapted for radiation into the room than the square opening of fig. 3; the fire being brought further forward, has also more heating effect; the space of the fireplace being smaller, the air within it will with a given sized fire become hotter, and therefore have more ascending power: while in the contracted throat widening downward, and having its sides strongly heated, there is a rapid rush of heated air, which carries the smoke upward, and resists the passage of temporary down-draughts. Most modern chimneys and fireplaces are now constructed in accordance with Count Rumford's suggestions: see GRATE.

One frequent cause of smoky chimneys is the want of sufficient inlet for air to the room. Sandbags placed under doors, and other devices for preventing ventilation, may cause a well-constructed C. to smoke. Openings must exist somewhere, of sufficient capacity to supply the air which is to ascend the chimney. If the air enters the room on the same side as the fireplace, and sudden gusts of air pass across the front of the fireplace, a temporary descending current is likely to be produced. The openings are best opposite the fire. For the methods of arranging and regulating such openings for the admission of air, see VENTILATION.

Tall factory-chimneys, usually of brick, are very costly structures, many of them rivalling in height the loftiest church spires. Their construction has been considerably

economized by building from the inside, and thus saving the expensive scaffolding. Their walls are built very thick at the base, and gradually thinner upward; recesses are left at regular intervals in the inside, and stout wooden or iron bars rest upon these to form a sort of temporary ladder for the workmen to ascend; the materials are hoisted by ropes and pulleys. Sheet-steel chimneys are largely used in the U. S. They are much cheaper but less durable than brick, and are objectionable on account of their rapid cooling by the action of the external air.

CHIMPANZEE, n. *chĭm′păn-zē′* [from a native name], (*Troglodytes niger*): species of ape; one of those which in form and structure exhibit the greatest resemblance to man. It is a native of the warmest parts of Africa; to which also the gorilla (q.v.), a larger species of the same genus, belongs. The chimpanzee is sometimes called the Black Orang; but differs from the orang (q.v.) (*Pithecus*) of Asia in the proportionally shorter arms, which, however, are much longer than those of man; in the possession of an additional dorsal vertebra, and an additional or thirteenth pair of ribs; and in other particulars, in some of which it more nearly resembles, and in other more widely differs, from the human species. In both, the difference from man is very wide in the general adaptation of the structure for movement on all-fours and for climbing and moving about among branches, rather than for erect walking, although the chimpanzee is able to move in an erect posture more easily than any other ape, usually, however, when so doing, holding its thighs with its hands; and still more in the form of the skull, and consequent aspect of the countenance, the facial angle being as low as 35° in the chimpanzee when it is measured without regard to the high bony ridges which project above the eyes; the jaws excessively projecting, and the outline of the face rather concave. There is also an important difference from the human species in the dentition; though the number of teeth of each kind is the same, the canine teeth of the apes are elongated, so as to pass each other, and corresponding intervals are provided for them in the opposite jaw. An interesting point of difference of the anatomy of the chimpanzee and orang from that of man, is in the muscle which in man terminates in a single tendon, and concentrates its action on the great toe, terminating in the apes in three tendons, none of which is connected with the great toe or hinder thumb, but which flex the three middle toes; part of the adaptation of the foot for clasping as a hand. The great toe both of the chimpanzee and orang is shorter than the other toes, and opposed to them as a thumb.

The chimpanzee does not seem to attain a height of quite four ft. when in an erect posture. Its skin is thinly covered with long black hair in front; the hair is thicker on the head, back, and limbs. The ears are remarkably prominent, thin, and naked, not unlike human ears in shape. The nose appears as little more than a mere wrinkle of the

skin. The thumb of the hand is small and weak, that of the foot comparatively large and powerful. In a wild state, the animal appears to be gregarious, but its habits are not well known. Truth and fable have been so mixed up in the accounts of it, that new information must be obtained from trustworthy sources before even things not in themselves very improbable can be believed. In a state of confinement, it exhibits, at least when young,

**Chimpanzee.**

considerable gentleness and docility, and readily learns to imitate human actions, in eating with a spoon, drinking out of a glass, and the like; but its intelligence does not appear to be superior to that of many other monkeys, or indeed of many kinds of brutes. Its natural food consists chiefly of fruit and other vegetable substances; in confinement, it exhibits a great fondness for sweetmeats and for wine. The chimpanzee is impatient of cold, and northern temperate climates usually prove fatal to it.

CHIN, n. *chĭn* [AS. *cinne;* Dut. *kinne;* Icel. *kinn*, the jaw, the cheek: L. *gena*, the cheek: Gr. *genus*, the jaw, the chin]: the part of the face below the under lip.

CHINA, *kī′nă*, or CHINA NOVA, *nō′vă* [It. *China;* Sp. *quina*, China: Swed. *kina-bark:* L. *novus*, new]: the German name for Peruvian or Jesuits' bark; various kinds of cinchona bark. See CINCHONA.

CHINA, n. *chī′nă:* a fine kind of earthenware, originally from *China* (see PORCELAIN): ADJ. of or from China. CHINA-SHOP, a shop for the sale of china-ware, etc. A BULL IN A CHINA-SHOP, strength and violence unresisted. CHINESE, a. *chī-nēz′*, of or pertaining to China: N. the language or inhabitants. CHINA-ASTER, *-ăs′tėr* [Gr. *aster*,

a star]: a genus of plants having compound flowers; the *Aster Chinen'sĭs*, ord. *Compositæ*. China-clay, the finer varieties of pottery-clay, called *kaolin* (see Clay). China-stone, the decomposed granites yielding the china-clay or kaolin of commerce. China-wax, product of an insect living on ash trees, in China. It is deposited on the limbs, from which it is scraped; then, after being melted and strained, it resembles bees' wax.

CHINA. See Chinese Empire.

CHINA GRASS, or Chinese Grass: popular name of a fibre used in China for the manufacture of a beautiful fabric known as *Grass-cloth*. The name appears to have originated in the belief that the fibre was that of a grass; but this is not the case, it being chiefly obtained from *Bœhmeria* (q.v.) *nivea*, a plant allied to the nettle. Besides this and other species of the nat. ord. *Urticaceæ*, other plants, as species of *Corchorus* (q.v.) and *Sida* (q.v.), are believed to yield fibres employed in the same manufacture. The fibres are said not to be spun after the European manner, but joined into long threads by twisting their ends together. Grass-cloth is now brought in considerable quantity to Europe and America: it has a fine glossy appearance and a peculiar transparency.

CHINANDEGA, *chē-nan-dā'gâ:* town of Central America, Nicaragua; in a fertile plain at the foot of some mountains, about 18 m. n.w. of Leon, and about 10 m. from the Pacific coast. The houses are straggling, of one story, built of adobes, and many of them are inclosed by gardens and plantations. Maize, sugar, cotton, hides, and poultry are produced in the vicinity. Pop. abt. 10,000.

Old Chinandega, contiguous, has a pop. of abt. 4,000.

CHINA ROOT: root, or rather the *rhizome* (root-stock) of *Smilax China*, a climbing shrubby plant, closely allied to sarsaparilla, and belonging to the same genus; native of China, Cochin-China, and Japan. See Sarsaparilla: Smilaceæ. The stem is round and prickly, the leaves thin and roundish oblong; the rhizome tuberous and large; sub-astringent and diaphoretic. It is occasionally used in medicine, and is imported in a dry state into Europe; but in the East it is used also for food. It abounds in starch.

CHINA SEA. See Chinese Sea.

CHINCAPIN. See Chestnut and Oak.

CHINCHA ISLANDS, *chĭn'cha*, or *chēn'châ:* in the Pacific, 12 m. from Pisca on the coast of Peru, and 106 m. s. of Callao; lat. 13° 38′ s., long. 76° 28′ w. North Island, the largest of the three, is $\frac{4}{5}$ m. by $\frac{1}{3}$ m. They are of volcanic origin and granitic formation, barren, and important only from their immense deposits of guano, which before its removal added some 90 ft. to the height of the rocks. The cliffs were worn into caves, arches, and hollows, which multitudes of penguins and smaller birds made their resort. Idols, water pots, and other relics of Peruvian antiquity have been found in the guano, some of them at a depth of 62 ft.

The guano was estimated 1846 at 18,250,000 tons, and 1853 at 12,376,100. Numbers of convicts and Chinese coolies were employed in its transportation. Though all food, and even water, was brought from the mainland, 6,000 persons were living on North Island 1868; the number had diminished in 1874 to 105. The export continued active 1841-72, and over 100 vessels were often loading at one time; after 1872 it was nearly abandoned, the supply being practically exhausted. These islands were a bone of contention between local powers 1853-4, and were seized 1864 by the Spanish admiral Pinzon to bring Peru to terms in a dispute with Spain.

CHINCH-BUG, n. *chinch-bŭg* (*Blissus leucopterus*): a hemipterous insect known throughout the U. S.; in some seasons extremely destructive in grain-growing sections. It is $\frac{3}{20}$ in. long, black, with white wings, each of which has a black spot. Its odor is offensive. It winters in the mature state, in the shelter of grass or rubbish in a dry locality, and becomes active early in spring. The female lays about 500 eggs, which are deposited on or near the roots of plants. There are two broods each year; and sometimes a third, but small one, appears. The larva is wingless, but otherwise resembles the adult except in size. The chinch-bug feeds principally upon grains and grasses. It can endure severe cold, but continued dampness is destructive. Birds, toads, frogs, and predaceous insects are among its enemies. In wet seasons countless numbers perish from fungus and bacterial diseases, some of which a few of the Government Experiment Stations have artificially introduced into infested fields. As it sucks its food the chinch-bug cannot be poisoned; but kerosene emulsion (see INSECTICIDES AND FUNGISIDES) is a destructive agent. Migrations are principally on foot. A few furrows harrowed into fine dust, or a shallow trench filled with coal tar and kept from drying, will check the progress of an army.

CHINCHEW, or CHINCHU, *chĭn-chō′* (properly CHWAN-CHOW-FOO): ancient port of China, province of Fuh-kun; lat. 24° 57′ n., long. 118° 35′ e. In the middle ages it was the great port of trade with the west, and known to the Arabs as Zaitûn; Marco Polo called it 'one of the two greatest seaports in the world,' and Ibn Batuta 'the greatest.' The name Chinchew was somehow transferred by Europeans to Changchow, a city 60 m. w.s.w., and hence confusion has arisen. Chinchew is now reduced from its former greatness. It contains the ruins of an Arab mosque; and there is an English Presb. mission, established 1862.

CHINCHILLA, n. *chĭn-chĭl′lă* (*Chinchilla*, *Eriomys*, or *Callomys*): genus of small S. American rodents, type of a family, *Chinchillidæ*, allied to Cavies (*Cavidæ*), but differing from them in possessing clavicles. The general aspect is somewhat rabbit-like. There are several genera of *Chinchillidæ*, distinguished in part by the number of toes; the

true chinchillas having four, with the rudiment of a fifth on the fore-feet, and four on the hind-feet; whilst in the genus *Lagidium* or *Lagotis* there are four on each foot; and in *Lagostomus*, four on the fore-feet and three on the hind-feet. All the species of this family are gregarious; feed much on roots, for which their strong and sharp incisors are particularly adapted; and live either in holes, which they select for themselves in rocky districts, or in burrows, which they excavate. They are valued for their soft gray fur, particularly the CHINCHILLA of the Andes (*C. lanigera*), of which the fur constitutes an important article of com-

Chinchilla.

merce. Their numbers are said to be sensibly decreasing in consequence of the demand for the fur. The ancient Peruvians were accustomed to employ the wool of the chinchilla for the manufacture of fine fabrics. Molina suggests that the Chinchilla might easily and profitably be kept in a domesticated state.

CHINCHON, *chēn-chōn′:* town of Spain, province of Madrid, 25 m. s.s.e. of the city of Madrid; pleasantly situated on a hill near the Tagus. Agriculture is the chief occupation of the inhabitants. Peruvian bark was named *Chinchona*, now habitually misspelled *Cinchona* (q.v.), after a Countess of Chinchon, wife of the gov. of Peru, 1638. Pop. about 5,000.

CHINCOUGH, n. *chĭn′kŏf* [Dut. *kinkhoest*—from *kincken*, to wheeze; *hoest*, a cough: Scot. *kink-host*—from *kink*, to labor for breath; *host*, a cough]: the whooping-cough or hooping-cough.

CHINE, n. *chīn* [F. *échine;* OF. *eschine*, the backbone—from Prov. *esquina*—from OHG. *skina*, a needle, a prickle: W. *cefn*, a ridge]: the backbone of an animal; a piece of the backbone, with adjacent parts, cut from an animal for cooking; part of the water-way of a ship: V. to cut into chine-pieces. CHI′NING, imp. CHINED, pp. *chīnd.*

CHINÉ, n. a. *shē′nā* [F. *chiné*—from *chiner*, to dye or color to resemble Chinese silks, etc.]: variegated ladies' work made with threads variously colored, producing pleasing and effective designs.

A 90° B 100° C 110° D 120° E 130° F 140° G 150°
RUSSIA
SIBERIA
MONGOLIA
CHINESE TURKESTAN
TSUNGARIA
DESERT OF GOBI
CHINESE EMPIRE
TIBET
MANCHURIA
SEA OF OKHOTSK
SAKHALIN
JAPAN
HONDO
YELLOW SEA
EAST CHINA SEA
RIU-KIU IS.
PACIFIC OCEAN
INDIA
BURMA
FARTHER INDIA
SIAM
INDO CHINA
BAY OF BENGAL
MALAY PENINSULA
PHILIPPINE ISLANDS
LUZON
MINDANAO
SULU SEA
CELEBES SEA
BORNEO
DUTCH EAST INDIA
JAVA SEA
BANDA SEA
ARAFURA SEA
NEW GUINEA
EASTERN ASIA
INDIAN OCEAN
PEKING
SEOUL
Shanghai
Canton
Hongkong (Br.)
Tokio
Vladivostok
Harbin
Mukden
Nanking
Hankow
Chungking
Chengtu
Lhasa
Rangoon
Bangkok
Saigon
Singapore
Batavia
Manila
Kuching
Sandakan
Menado
Macassar
Amoy
Foochow
Tientsin
Port Arthur
Tsingtao
Nagasaki
Kagoshima
Kumamoto
Osaka
Kobe
Nagoya
Yokohama
Hakodate
Sapporo
Formosa
Tropic of Cancer
Equator
SCALE OF MILES
0 100 200 300 400 500

CHINESE EMPIRE, *chī'nēz:* the original name of the vast territory now known as China, is a matter of conjecture and discussion, now impossible of certain conclusion. The name now used is not recognized by the occupants of any portion of the region, nor is there any reason to believe that it was at any time so known. The earliest known title used by the natives was Chin, or Tsin, and their neighbors in Asia, the Indians, Persians, Arabians, together with the inhabitants of the Malay Archipelago, all of whom are known to have had intercourse with the Chinese from the very beginning of history, have only known the country and its people by the names Jin, Chin, Sin, Sinae, Tzinistae, and others similar. There is little, if any, reason to doubt that the Prophet Isaiah had reference to China when speaking of Sinim about B.C. 712 (see Isaiah xlix. 12).

The most probable account of the origin of the name Chin, or Tsin, attributes it to a family long powerful in what is now the province of Sein si, in the upper valley of the Huang Ho (Yellow River). In the dawn of Chinese history the head of this house, having received the gift of a city named Chin from the emperor then on the throne, adopted that as his family name. When, later, a descendant of his had gained full sway throughout the Empire, and made himself famous in various Asiatic States, partly by military conquests and partly by great commercial dealings, he still clung to the name of his ancestral city, which thus became known to other Asiatic States having commercial relations with China, as the name of the Empire. Thus it became a custom, since followed, of calling the country by the name of the ruling dynasty. Or rather, upon securing domination over the country, it has become the rule to select some fanciful name for the official title of the Empire, which, however, is the term by which the dynasty is designated, and has never been accepted by the people as the name of the country. Thus the official title of the present ruling family is the Ta Ching Kuo or the Great Pure Empire, as that of the ruling family last preceding the present was the Ta Ming Kuo (The Great Bright or Brilliant Empire), but neither of these terms was accepted by the Chinese as the name of the nation. They were used in official documents and titles, and nowhere else.

Other and equally fanciful names have been chosen from time to time to represent the nation, chosen largely out of vanity and mistaken ideas of the people regarding the geographical position and the rank of China among the nations of the world. That most common and by far the most permanent and now in general use is Chung Kwo, which is translated as 'The Middle Kingdom,' but of which a better and more dignified version would be 'The Central Empire.' This also represents the pride and vanity of the Chinese in their country as the centre and ruling power of the earth. It is significant that they have five great points of the compass: the four everywhere used,

to which the Chinese add 'chung' or 'centre,' their land constituting the centre. Thus they recite them as north, south, east, west, and centre.

*Location and Topography.*—The Chinese Empire occupies the eastern slopes of the Asiatic continent. In form it represents roughly the space within a deeply drawn bow, the arrow pointing westward, the cord and points of the bow resting upon the Pacific Ocean. The southern bow point rests in 18° north latitude while the northern is found in about 54° north. The arrow head, which represents the most westerly point of the Empire, is found in lon. 76° E. The most easterly point lies in long. 132° E. After the most careful examination, the area of this vast region is estimated as 4,225,000 square miles. It is bounded upon the north and northwest by Russian Siberia and other possessions of the Czar, the two Empires being contiguous for 3,300 m., from Afghanistan to the Japan Sea. It is bounded upon the southwest and south by British India and Burmah, Siam, and French Indo-China. Its eastern and southeastern boundary is composed of various arms and subdivisions of the Pacific Ocean, known as the Gulf of Tonquin, the China Sea, Formosa Channel, Yellow Sea, Gulfs of Liao Tung and Pe-chi-li. The coast line from the island of Hainan to the northernmost point is more than 3,000 miles, and the entire circuit of the Empire is about 12,000 miles. It occupies about one-third of the continent of Asia, and has a population, according to the latest and most reliable estimates, exceeding 446,000,000. As the census is taken solely for purposes of taxation, this statement of population is probably less rather than more than the fact.

*Political Divisions.*—The Chinese divide this vast Empire into three principal parts, because of different forms of government which they have adopted in each, though this, for the same reason, should be increased to four. These are: (1) China Proper, or China, all else being regarded as Outside Possessions. It is commonly known among the people as The Eighteen Provinces (Shih pa Sheng). (2) Manchuria, the original home of the Manchus, the present ruling dynasty of the Empire. (3) The Colonial Possessions, which include Mongolia, Ili (which comprises Sungaria and Eastern Turkistan), Kokonor, and Tibet. But Tibet should constitute a fourth division, since the government of it is wholly different from either of the others. The large island of Hainan, which forms the most southern point of the Chinese Empire, is an integral part of Kwang-Tung, one of the provinces of China. Until its cession to Japan in 1895, the Island of Formosa, separated from the continent by the Formosa Channel, formed a portion of the province of Fu-Chien. For details regarding Manchuria, the Colonial Possessions of China, and Tibet see their respective titles.

*China Proper,* or The Eighteen Provinces, occupies the basins of three great rivers which have their sources in the slopes of the Himalaya Mountains and table-lands

adjacent, and flow eastward, finally emptying into the Pacific Ocean. In form it is, roughly speaking, that of a rectangle, lying within the deeply bended bow to which the entire area of the empire has been likened. The southern boundary is conterminous with the boundary of the entire empire, as is the eastern, the Colonial Possessions being at the north and west of China Proper. Its greatest length is from north to south 1,474 miles, while the breadth is 1,355 miles, and the total area cannot be much less than 2,000,000 square miles, or rather more than two-fifths of the area of the entire Empire. The coast line from Hainan to the northern limit in the Gulf of Liao-Tung is more than 2,500 miles, while the land frontier is 4,400 miles. The estimate of population is in excess of 428,000,000, being subject to the same qualifications attached to the population of the entire Empire.

*Physical Boundaries and Divisions.*—It may be said that the Chinese Empire is fenced in upon three sides by great mountain ranges and faces the sea upon the fourth, while the Eighteen Provinces, or China Proper, is farther hedged in and subdivided by less important ranges, these forming the watersheds of the great basins within which it lies. Upon the north is the Altai Range stretching some 2,500 miles east and west, and forming the northern limit of the table-land of Central Asia as well as marking the boundary between China and Russia. Forming the western boundary are the Tien Shan (Mountains of Heaven), which run in a southwesterly direction until, west of Kashgar and in the Penin region, it joins the Kuen Lun Mountains which continue the boundary southeasterly until they, in turn, are merged in the Himalayan System which continues the boundary along the southern frontier, nearly completing the circuit to the ocean. A small spur from the Yun Ling completes the line upon the south, and another short range at the northeast, known as the Shan-a-lin, forms the boundary line between Manchuria and Corea. The Pei-lin, Ching-lin, and Nan-lin, (the North Range, Blue Range, and South Range) outspurs from the great mountain ranges mentioned, stretch across China Proper in a general direction from west to east, dividing it into three great river basins and rendering four-fifths of the Eighteen Provinces a region either mountainous or hilly. Excepting a portion of Kan-Su, a province at the extreme northwest, there is but one plain of any size within their limits. This latter occupies the northeastern section of the Empire, having the sea for an eastern boundary and extending west to the 112–115 meridian, and extending north from lat. 30° N. to Mongolia. Even this comparatively small area is disturbed at points by clusters of hills, and a broad strip across the northern border would be more exactly described as a plateau, being suddenly lifted to an elevation of some 4,000 feet above the portion lying to the south of it. The entire plain has an estimated area of 210,000 square miles, is exceptionally fertile and under high cultivation, and supports an estimated population of 177,000,000.

The three great basins mentioned are occupied by three great river systems respectively. That upon the north contains the Hwang Ho (Yellow River) with its tributaries; the Central contains the Yang-tse-kiang (Son of the Sea) with its lake and river connections; and the Southern holds the Choo Chiang (Pearl River) with numerous tributaries, most important among which is the Hsi Ho (West River), even longer, more important to commerce, and better known than the parent stream. The Pearl River is commonly known to foreigners as the Canton River.

These riverine divisions of China Proper constitute three great zones of climate and productions and, to a large extent, the political subdivision of the Empire into 18 provinces, each corresponding to a State, has been determined by and conforms to them. Thus, the Northern zone, lying north of the parallel of lat. 35°, contains the 5 provinces of Shan-Tung, Chi-li, Shan-Si, Shen-Si, and Kan-Su. The Central zone, lying between the parallels of 35° and 28°, is divided into 8 provinces as follows:—Ho-Nan, Kiang-su, Ngan-Hwei, Hoo-Pei, Hoo-Nan, Kiang-Si, Che-Kiang, and Sze-Chuen. The Southern zone, containing all of China south of the parallel of 28°, is divided into the 5 provinces of Foo-Chien, Kwang-Tung, Kwang-Si, Kwei-Chow, and Yun-Nan.

The *lakes* of China are neither numerous nor important. Those worthy of mention are five in number and are found within the plain already described. Of these, four, the Tung-Ting, Poyaing, Tsan, and the Tae, all serve as reservoirs and feeders to the Yang-tse-kiang, and are adjacent to it, while the fifth, the Hungshih serves a similar purpose to the Hwang Ho. An immense number of small lakes, ponds and marshes are scattered throughout the Empire, all of them swarming with fish and aquatic birds, and all of them thereby supporting a considerable population.

*Climate and Productions.*—A comparison of the latitude and longitude of China with that of the United States, or a study of a terrestrial globe, will show that the two countries are located upon almost exactly opposite sides of the earth. Thus, Philadelphia is upon the same latitude with Peking, the Chinese capital, and the time upon any point of the northern Atlantic coast differs by a few minutes only from that upon the eastern coast of China, the latter being substantially 12 hours in advance of the former. In latitude, which has mainly to do in determination of climate and productions, the two are practically identical—the United States extending from lat. 28° to 48° 40′ n. and China, omitting the unimportant island of Hainan, from 28° to 45° n. Hence differences in climate are not great, being such only as are due to elevation, the contour of the land, and resultant differences in prevailing winds. To a considerable extent, there is a similar correspondence in the productions of corresponding sections of the two countries.

Following the divisions into three zones already given, beginning with the north, this will at once be apparent. The temperature of the northern zone in China ranges slightly higher than within the same parallels in the United States, following far more closely the length of days than here, the coldest weather invariably being felt at the end of December and the greatest heat at the end of June, and those sudden changes of temperature, so disastrous to health here, are practically unknown there. The thermometer (Fahrenheit) ranges, with great regularity between the extremes of about 10° to 110°. Little or no snow is seen, and substantially the entire precipitation of moisture during the year occurs in midsummer. The autumn and winter are the most healthful and pleasant seasons of the year. The natural productions of the provinces which constitute this zone are: millet, four varieties, wheat, upland rice, cotton along the southern border, barley in the extreme west, that variety of silk known as 'Pongee' its peculiarities being due to the fact that the silk worm is fed upon the leaf of a species of oak rather than the mulberry; sweet potatoes, many kinds of pulse, vegetables in nearly all the varieties known here, peaches, pears, apricots, apples, grapes, and in the greatest quantity of all fruits, persimmons. To these must now be added Indian corn and in the upland regions Irish potatoes and oats, which have been recently introduced so successfully that they are already important factors in the food-supply.

The Central Zone, containing eight provinces and embracing the entire valley of the Yang-tse-kiang, produces tea, silk, cotton, rice, wheat in the uplands, hemp, indigo, bamboo, camphor, varnish, and tallow trees, besides many of the vegetables and fruits named in the Northern zone, as well as others which are supposed to be confined to a more southern region. The climate, like that of the Northern Zone, is slightly warmer, has a greater rainfall and consequently is more damp than that of the same latitudes of the United States. In place of the cyclones which play such havoc through the United States during the summer months, the typhoon (Chinese tai-feng, excessive wind) ravages the coasts of the Central and Southern Zones, from June to October, and the seas adjacent, causing great loss of life and property. These whirlwinds invariably have their origin in the Philippines, sweeping thence in a westerly direction toward the coasts of China and Japan, thence into the broad Pacific, where they lose their force.

The Southern Zone has an essentially tropical climate. Its natural productions consist of rice, tea, silk, sugar (from the cane), hemp, tobacco, opium, rhubarb, and horses, musk, and skins in the extreme western part, where lead, copper, and quicksilver are also produced in large quantities.

Sulphur and salt, both government monopolies, are produced in various parts of the Empire, and from the latter

a large revenue is derived. The Imperial Government having ceased to enforce the law forbidding the cultivation of the opium poppy, this plant has been grown for a number of years to a great extent in the western and southwestern provinces. In the years 1906-7, with the tacit consent of Great Britain, drastic measures were, however, adopted to put an end to the cultivation of the plant and the use of the drug within a term of ten years.

*Public Improvements.*—Though the Chinese can be said to have only now commenced the provision of adequate means of intercommunication between different parts of the country, in the construction of a system of railways, they have for many centuries provided and made full use of artificial water-ways, which connect their rivers, large and small, lakes and ponds, except in the extremely mountainous districts. These canals have in the main been constructed by local authorities, or public-spirited individuals of whom there is no lack in China. Chief of them is *The Grand Canal,* as it is commonly called by foreigners, though properly named the Yun Ho, or River of Transit. It connects a vast network of smaller canals, and by means of it an almost complete inland water communication exists from Pekin to Canton. Compared with some of the great modern canals it is inferior, but nothing like it existed in the world at the time of its construction, or for centuries thereafter. In general characteristics it closely resembles the Erie Canal, though varying far more than the latter in breadth and depth. It is about 650 miles in length, connecting Hang Cho Fu near Shanghai, a central depot of the rice production, with Peking. This great work is generally credited to Kublai Khan, the great Mongol warrior who reigned over China about A.D. 1280, but in fact it was built in three sections at three periods, centuries apart. The first section in order of time was that connecting the Yang-tse-kiang and the Hwang-Ho, and was built by the Princes of the Tang Dynasty, in the 7th century A.D.; the second section, that from the Hwang-Ho north to Peking, was built by Kublai in the 13th century; and the third section, south from the Yang-tse-kiang to Hang-Cho-Fu, by the most celebrated ruler of the Ming Dynasty about A.D. 1420. A military as well as a commercial purpose was served in the construction of this great work. For centuries a large portion of the Imperial tax collected in the rice-producing provinces has been paid in rice, which was transported to Peking, where it was and is distributed as rations to the army. This called for the transportation of some 430,000 tons of rice, for which the canal was intended to furnish an inland water-way, safe from storms, pirates, and, in case of war, public enemies.

In southern China, where nearly all travel is by water, there are few public highways, and those generally are not good. In northern China, the roads are generally

wide and kept in fairly good repair, often being shaded but generally dusty, and in the rainy season deep with mud. That the Chinese have for centuries had a good knowledge of the principle of the arch is plainly seen in the numerous bridges and other examples of that architectural form of structure, often of great age and elegant construction, to be found in all parts of the Empire.

*The Great Wall* has long been known as one of the wonders of the world. The original wall was built between 246 and 202 B.C. by the forced labor of soldiers under such conditions of cruelty and hardship, that of it the Chinese say 'every stone or brick in it represents a human life.' Enormous as was the undertaking, the task was completed in 10 years. It was built during the reign of Emperor Chi, sometimes called the Napoleon of China, to prevent the incursions of the Mongols or Huns, and followed the boundary line between China and the wilds of Mongolia from the sea at the east, lat. 40° 4′, long. 120° 2′ e., to about long. 99° e., in lat. 40° n. The total length of the genuine or original *Great Wall* is about 1,260 miles, though it is known among the Chinese as the Wan-li-Cheng (10,000 li wall—a li is about one-third of a mile). It is carried over the highest hills, through the deepest valleys, across rivers, overcoming every obstacle, and is a most striking feature of the landscape. It was built of stone or huge kiln-baked bricks as occasion suited, was about 25 feet thick at the base and 20 at the top, not including bastions which occurred at about every 100 yards, and varied in height from 20 to 30 feet. The solidity of construction may be judged by its preservation; though the genuine Great Wall is largely in ruins, it is everywhere easily to be identified, and for considerable portions of the length the lower portions are still erect. It should be said that within this structure other walls have been built at much more modern dates, which have been mistaken by travelers for the Great Wall. Such is found near Peking, built in the 14th century A.D. This is about 30 miles from the capital, while the ancient wall is some 125 miles further north.

*Geology.*—The high lands, where are the sources of the great rivers of China, consist of granitic and metamorphic rocks. These are continued round the south and southeast of the country, until they leave a huge basin, through which flow the Yang-tse-kiang and Hwang-Ho, occupied by fossiliferous strata. The wild and rugged scenery of the larger portion of China is owing to the predominance of those crystalline and sub-crystalline rocks. The fossiliferous strata exhibit representatives of the various formations. The Palæozoic rocks are but sparingly developed in a narrow strip which runs from near Peking, in a southwest curve, to nearly the centre of the Empire. Cretaceous rocks occur in the valley of the Yang-tse-kiang. Tertiary beds fill up the east portion of the immense basin; while extensive districts to the west of this region, extending to the crystalline rocks in the extreme west, are covered with modern detritus.

Though no active volcanoes are known to exist, yet indications of volcanic action are not wanting. Salt and hot-water springs are in Yun-Nan, sulphur springs near Foo-Chow; and wells of petroleum in Shen-Si and Sz-Chuan. The most famous among the *minerals* of China is jade, or the Yu-stone, obtained chiefly in Yun-Nan. Coal, limestone, and porcelain clays are abundant. Precious stones are said to be found in some districts. In Yun-Nan, gold is washed from the sands of the rivers, and in various parts of the Empire silver mines are worked; here, too, is obtained the celebrated pe-tung, or white copper. All the commoner metals likewise are found in China. Near the city of Ning-Po are extensive stone quarries. Granite, marble, and other valuable building stones are found in great abundance in various parts of China.

*Vegetable Productions.*—Our knowledge of the flora of China has been much advanced by the researches of Fortune, Richthofen, and others; and there are now numerous works discussing the geography, culture, and varieties of the tea-plant, and of the botany of the country generally. The tea-plant (*Thea viridis* and *Thea bohea*) is the most important vegetable production of China (see Tea). The tallow-tree (*Stillingia setifeca*), the *Dryandea cordata*, or varnish-tree, the camphor-tree (*Laurus Camphora*), the Chinese pine (*Pinus Sinensis*), the Chinese banyan (*Ficus nitida*), the funeral cypress—introduced into Britain by Mr. Fortune—and the mulberry, are among the most important trees of China. The cocoa-nut and other palms flourish on the southern coasts. Of the bamboo, which grows under cultivation as far north as lat. 38°, there are 63 principal varieties; and it is said that the bamboos of China are more valuable than her mines, and, next to rice and silk, yield the greatest revenue. The various uses to which they are applied is truly astonishing; among these is the use of the bamboo as an instrument of punishment. The fruits of both the tropical and temperate zones—apples, grapes, pomegranates, mangoes, pineapples, several species of orange, the lichi, etc.—are found in the country; and camelias, azaleas, gardenias, and the chrysanthemums are natives of the 'Flowery Land.' The *nymphea*, or lotus, is greatly prized by the Chinese, both for ornament and from an economical point of view.

*Agriculture* is held in higher estimation in China than, perhaps, in any other country in the world. On 21st March, of each year, a grand State ceremony is performed in its honor. The Emperor, accompanied by his great officers of state, repairs to the Temple of Agriculture, and having offered sacrifices on an altar of earth, he traces a furrow in the sacred field with a plow, and his example is followed by princes and ministers. A like solemnity is celebrated by the Governor of every province, who represents the Emperor. The agricultural system of the Chinese is rude, but effective, and every inch of arable land is carefully cultivated. Spade-husbandry and irrigation are carried on to a great extent. The Chinese have a high

appreciation of the value of fertilizers of every class. They are everywhere collected with the utmost care, bear a comparatively high price, and nothing available for the enrichment of the soil is allowed to go to waste. Some of their methods are amusing, while others are offensive and unhealthful.

*Animals.*—Very little is really known of the zoology of China. The common domestic animals of all classes, including the water buffalo, and mules remarkable for size, are found there in great abundance. Some of the more ferocious of the carnivorous animals still linger in the jungles of Yun-Nan, and are occasionally found along the whole of the Nan-Ling range of mountains as far as Ning-Po, where there is a market for their skins. Wild cats are common in the forests of the south, and bears are still found in the hills of Shan-Si. Of the ruminantia are the musk-deer (*Moschus moschiferus*), the moose-deer, and several other species. Wolves, foxes, leopards, and the cheetah are found in all parts of the Empire, where they flourish in spite of the density of population, because the inhabitants are not allowed the use of gunpowder. Foxes playing in the streets of Peking is no uncommon sight, and in winter this capital is one of the best game markets in the world. The gold and silver pheasant, the argus pheasant, and other gallinaceous birds are prominent in the ornithology of China. The various varieties of Chinese pheasants have been brought to America and acclimated here with great success. Fly-catchers, thrushes, grackles, and goat-suckers have their representatives in China, and there are several species of crows, jays, and magpies. Water-fowl inhabit the lakes, rivers and marshes. The larger reptiles are unknown; but tortoises and turtles abound on the coast, and lizards are plentiful in the south. The ichthyology of China is considered to be one of the richest in the world. Sharks, rays, sturgeons, and other cartilaginous fishes, are common on the coast; and the carp is very plentiful in the lakes and rivers; it is also reared in artificial tanks as an article of food, being sold alive for that purpose. The goldfish originated in China, whence it has been introduced in America and Europe. Of insects, the arachnidæ are large and numerous; indeed a tree-spider captures and kills small birds. Locusts often commit extensive ravages. Silk-worms are highly valued, and reared in innumerable quantities.

*The Chinaman.*—The area thus briefly described is inhabited by more than 400,000,000 of the human race, living under the same government, ruled by the same laws, speaking the same language, studying the same literature, possessing a greater homogeneity, a history extending over a longer period, and a more enduring national existence than any other people, whether of ancient or modern times. Indeed, in view of its high antiquity, its peculiar civilization, its elaborate administrative machinery, its wondrous language, its philosophy and classic literature, its manufacturing industry and

natural productions, giving rise to such a gigantic commerce with civilized western lands, China is perhaps the most remarkable country in the world, and is worthy of close and serious study.

The Chinese race, supposed by the best authority among themselves to have originated in the upper valleys of the Yellow river, in what is now the province of Shen-Si, is essentially pure, containing a smaller infusion of alien blood than any other known. Though the reigning family is Mongol, and though millions of that race are to be found in northern China, there is practically no inter-marriage between the two. The same is true of the Persians who are found in many millions in northern and northwestern China, having come thither in A.D. 618 and following years. A tawny or parchment-colored skin, black hair, lank and coarse, a thin beard, oblique eyes, and high cheek-bones, are the principal characteristics of the race. The average height of the Chinaman is not equal to that of the European, and his muscular power is not so great; the women are disproportionately small, and have a broad upper face, low nose, and linear eyes.

The Chinese are, as a race, unwarlike, fond of peace and domestic order, capable of a high degree of organization and local self-government, sober, industrious, practical, unimaginative, literary, and deeply imbued with the mercantile spirit. It is to be observed that the inhabitants of China Proper are esentially one people; the differences, except in dialect, being hardly more marked than those in England between the Northumbrian peasant and the Cornish miner. The south-eastern Chinese—the people of Kwang-Tung, Fuh-Keen, and the south of Che-keang—are the most restless and enterprising in all the 18 provinces, and may be regarded as the Anglo-Saxons of Asia. In the mountainous districts of the four southeastern provinces of China, but principally in Kuang-se, are certain tribes who maintain a rude independence, wear a peculiar dress, and are descended from the aboriginal inhabitants of China. Of these, the Meaou-tze are the best known.

As regards valor, their annals record deeds akin to the courage of antiquity, they have no fear of death, commit suicide as the solution of a difficulty, and endure the most cruel tortures with passive fortitude.

The *manners* and *customs* of the Chinese can only here be glanced at. The *worship of ancestors* is a remarkable and prominent feature in their social life, and is dictated by that principle of filial piety which forms the basis of Chinese society. The rich have in their houses a chamber —a kind of domestic sanctuary—dedicated to their forefathers. Tablets, representing the deceased persons, and inscribed with their names, are here carefully preserved; and at stated seasons, prostrations and ceremonies are performed before them according to the book of rites. All Chinese offer worship from time to time at the tomb of their parents. In everything that relates to death and sepulture, the customs of the Chinese are no less singu-

lar. They meet their last enemy with apparent unconcern; but while their future state troubles them little, they regard the quality of their coffins as of vital importance, and frequently provide them during their lifetime; indeed, a coffin is reckoned a most acceptable present, and is frequently given by children to their parents. Yet death is never alluded to in direct terms, but indicated rather by periphrases, such as the person exists no more, he has saluted the age, ascended to the sky; etc. Banquets are offered to the dead and pathetic speeches addressed to them. In China, *marriage* is universal, and within the reach of all; but there is a strict separation of the sexes; the betrothal is undertaken by the parents or by professional match-makers. Minute ceremonial observances regulate every step, and the bride and bridegroom are supposed to see each other on the wedding-day for the first time. Women hold a very inferior position, and are little better than slaves until they become mothers. Prior to that event, they retain the title of Miss, not being allowed to use the more dignified and honored title of Mrs. or Madame. Polygamy is not recognized by law, but secondary wives are common, especially when the first proves barren. Infanticide, though regarded as a crime, is undoubtedly practiced to some extent, as is proved by edicts issued against it; and parents possess almost unlimited authority over their children. The intercourse of the Chinese with each other, especially of the upper classes, is regulated by a tedious and elaborate etiquette; indeed, they are the slaves of custom, and everything is done by precedent. Many curious instances of Chinese politeness might be cited. The well-bred host presses many things on a visitor, which the latter must never dream of accepting. 'A Chinaman,' says Mr. Oliphant, 'has wonderful command of feature; he generally looks most pleased when he has least reason to be so, and maintains an expression of imperturbable politeness and amiability when he is secretly regretting devoutly that he cannot bastinade you to death.' *The Li-Ching; or Book of Rites;* regulates Chinese manners, and is one cause of their unchangeableness; for here they are stereotyped, and handed down from age to age. The ceremonial usages of China have been estimated at 3,000; and one of the tribunals at Peking—the Board of Rites—is charged with their interpretation. To such an extent is this regulation carried, that in spring and autumn of each year, the Emperor, upon the report of this Board, issues an order naming the day upon which the people of the entire nation shall change their apparel from winter to summer or the reverse. Thanks to the regularity of the climate, no evil effects are known to follow. Though this order is directed solely to the official class, it controls the fashions of the masses also, and is universally followed.

Chinese cookery, in the use of made dishes, more nearly resembles the French than the English. Birds'-nests soup, sharks' fins, deer sinews, and ducks' tongues, are

among the delicacies. The wine, or (more correctly) weak spirit (tsew), used by the Chinese is made from rice, and from this, again, they distil a stronger spirit, the 'samshoo,' a low-proof alcohol. Both are drunk warm in minute cups at their meals; tea never appears during a repast, though it may be taken before or after. The Chinese have numerous *festivals;* and perhaps the most remarkable of these is that celebrated at the commencement of the New Year, when unbounded festivity prevails. Preparatory to this, debts are settled, and the devout repair to the temples to gain the favor of the gods. The first day of the year may, in one sense, be reckoned the birthday of the whole people, for their ages are dated from it. Visiting is, at the same time, carried on to a great extent, while parents and teachers receive the prostrations and salutations of their children or pupils. The festival of the dragon-boats is held on the fifth day of the fifth month; and at the first full moon of the year, the feast of lanterns. In the manufacture of these the Chinese excel; and on the night of the festival, lanterns illuminate each door, wonderful in their variety of form and material.

In the matter of *dress*, the Chinaman exhibits his usual practical sense, and varies the material according to the season, from cotton-wadded or fur-lined coats to the lightest silk, gauze, or grass cloth. On the approach of cold weather, he lights no fire in his dwelling, but puts on additional clothing until the desired temperature is attained. A tunic or kind of loose jacket fitting close around the neck, and wide short trousers, are his principal garments. Shoes are made of silk or cotton, with thick felt soles. White is the color of mourning. The Manchu Tartar tonsure and braided queue became general with the Manchu conquest of the country, since which 180 millions of men have the hair removed from their heads at short intervals; and as no Chinaman is his own barber, a great number of this calling find employment. Criminals are not allowed to shave the head, and those in mourning for parents permit the hair to grow and remain disheveled as a sign of mourning. The Chinaman is very sparing in his ablutions, and appears to be affected with a strange hydrophobia; for cold water, either as a beverage or for washing his person, he holds in abomination. Long nails are worn by ladies and educated men, to indicate that they do no manual labor. The costume of the women differs little from that of the men, and their shoes are the most remarkable part of their toilet. A lady's shoe measures about $3\frac{1}{2}$ inches from the heel to the toe. The feet of the Manchu Tartar women are left as nature made them; but among the Chinese, all young girls of the better classes are crippled by a tyrant custom. In early infancy the feet are tightly bound, the (4) small toes being tucked under the sole, of which, after a time, they become a part, and the heel is forced up and back against the ankles. The process is at length complete;

stumps have been substituted for the ordinary pedal extremities, and the Chinese lady totters on her goats' feet. It should be added that this practice is rapidly disappearing.

Of the grand modern discoveries in the *physical sciences* the Chinese are profoundly ignorant, and the study of nature is altogether neglected. The Chinaman objects to be wiser than his forefathers, but spends a lifetime in studying his classical literature and the sages of antiquity; and here is doubtless one great cause of the homogeneity of the race, and the stereotyped nature of the Chinese mind. The nation presents a case of arrested intellectual, social, and spiritual development.

Of *animal physiology and medicine* the Chinese have very crude notions, as is shown by their *scheme* of the human body, in which the heart is placed in the centre, with the other organs ranged round it, and their unphilosophical theory of the pulse, which plainly demonstrates that they are ignorant of the true circulation of the blood and the vascular system in man; hence their practice of medicine must be empirical. Chinese physicians believe that man is composed of (5) elements; that so long as each maintains its due proportions, health is preserved; but should one gain the ascendency, illness follows, and the equilibrium must be restored by proper remedies. Acupuncture is practiced. The Chinese have had a recent opportunity of practically testing the superiority of Western medical science, by the presence and practice of foreign physicians and surgeons, and the establishment of hospitals and medical colleges among them. Western schools, colleges, and universities have also been developed to a considerable extent. These are meeting with steadily increasing favor, there is a great demand for Western scientific and other works, a large number of which have been translated into Chinese, and it has become quite impossible to satisfy the desire for them. The Chinese school system is being largely transformed to conform to Western modes and ideas.

*The Government.*—The type or form of authority in China is paternal. It is neither despotism nor autocracy, excepting so far as a father has the right of control over his children. In fact, the Chinese theory of government as maintained among them since the beginning of time, without substantial change or any signs of desire for it, is that of the family. From generation to generation, through century after century, the ablest Chinese statesmen, and the leaders of thought have maintained, as they still do, that it is divinely appointed and hence the most simple, natural, and wisest form of government known among men with which no other which has existed will bear comparison. And there are not a few thoughtful men in America and Europe who find an explanation for the unparalleled permanence of the Chinese Empire and the substantial peace, order, and justice maintained, in its practical obedience to that command-

ment of the Decalogue, 'Honor thy father and thy mother, that thy days may be long in the land,' etc.

In theory, which is largely conformed to in practice, the entire race is one family of which the Emperor, by virtue of his divine appointment as Son of Heaven, is the father. He claims no hereditary divine right, and is seldom the eldest son of the preceding monarch. The latter is supposed to select his ablest son, or he may choose the son of any man who in his judgment is best qualified to succeed him upon the throne. Whoever is chosen must prove his divine appointment as 'Son of Heaven' by good government, in accordance with the principles laid down in the writings of Confucius, and other even more ancient national books. He is not the 'Son of Heaven' because he is Emperor, but the reverse. The former is his supreme and sacred title, which he must justify to his children, the people, by his conduct. If they are directly responsible to him for their conduct, so is he to Heaven for his. If he violates the principles of good conduct, as indicated above, the people firmly believe that, by unmistakable signs Heaven signifies that he is not its chosen representative. The rivers rise from their beds, the ground sullenly refuses its harvest, the plains tremble, the hills roll, and typhoons rage over sea and shore, all alike denouncing a 'numbered, numbered, weighed and parted' which requires no interpretation, but is read in condemnation by the people, in dismay and terror by the monarch, who seeks by confession, repentance, and a return to true principles of government to avert his doom. Numerous instances are on record in which Emperors of China have made public confession of their faults and sought forgiveness and the renewed favor of Heaven. The Emperor Chia-Ching issued several such during his reign, A.D. 1796–1821. They are generally called forth by drought, floods, epidemics, and other natural phenomena, though insurrections, comets, and eclipses have been known to produce them. Viceroys, governors, and other high officers of State, who, being appointed by the Emperor are hence his deputy fathers of the people and deputy sons of Heaven, are also expected to confess their faults of administration and seek punishment at the hands of their master. They too charge themselves with fault, in case of drought, pestilence, floods and other natural phenomena which work disaster upon the people. Thus the Viceroy of Chihli requested severe penalty upon himself for his failure to discover and arrest the leader in a local insurrection; an admiral in the same province asked for disgrace and heavy punishment for not having properly educated his son, who, in consequence, became insane and wounded several persons; and another official denounced himself for severe punishment for failure to keep the Yellow River within its banks.

The Emperor is the sole and absolute law-maker, administrator, and final judge, as a father is the only au-

thority over his children. The Chinese have a carefully arranged code of laws, which began some 2,000 years ago, and which is wholly composed of the orders of succeeding Emperors, added to or modified from time to time. The penalties for crime are, in the main, wisely graded. There is no such thing known as imprisonment as a penalty for crime, but death is the punishment attached to a large number of offenses, and in ordinary years, about 10,000 criminals are executed. Juries and lawyers play no part in Chinese law and are not permitted in any courts, the magistrate is judge of fact as well as of law, and precedent practically determines every case. There are ample provisions for appeal even to the ear of the Emperor, but every man may and must plead his own cause.

*Councils of State.*—The Emperor is assisted in his government by two boards of councillors, the *Privy Council* and the *General Council*. The first is composed of six high officials, three of whom are Chinese and three are Manchus. The second is the more modern and the more active body, and corresponds somewhat to the Cabinet of the United States. It is composed of a considerable, but not a fixed number of high officers of State, about half of whom are Chinese and half Manchus. Meetings of these Councils are of almost daily occurrence. They have only advisory authority, and every item of business, no matter how unimportant, must be passed upon and finally decided by His Imperial Majesty. Immediately subordinate to these Councils are six Boards or Departments, each charged with a distinct branch of government. They are named as follows in the order of their importance:—Board of Civil Office; Board of Revenue; Board of Rites; Board of War (which also includes the Navy); Board of Punishment (corresponding to a Supreme Court and an Attorney-General combined), and the Board of Works. Over all these officials, with their innumerable company of secretaries, clerks, and writers; over all the provincial authorities, and over the conduct of the Emperor himself, is the *Court of General Supervision*, or as it is commonly called by foreigners, *The Censorate*. There are some 40 or 50 members of this body in the Capital and a much larger number scattered throughout the Empire. They are called 'the eyes and ears of the Emperor,' for it is their province to see that all officers of the government, metropolitan or provincial, are faithful in the discharge of their duties. They have the right, and the duty as well, of criticism of the conduct of His Imperial Majesty in person, and are not always slow to do so. The Censorate also constitute an independent Court of Justice through which a plaint may be carried to the court of last resort, before the Emperor, without costs, fees, or any expense in case of the poor.

The administration of government in the 18 provinces is very complete in organization and deserves serious study in order to reach a correct understanding of the Chinese and their rulers. The provincial organization

is much like that of a State in America. In each of the 18 provinces is a Governor, appointed by the Emperor, who, besides being at the head of civil jurisdiction, is Commander-in-chief, and has the power of life and death for certain capital offenses. He may correspond directly with His Majesty and the two Councils of State. Under the Governor is a Provincial Judge, Treasurer, and Superintendent of Government examinations, each of whom corresponds with the proper Board in Peking. Each Governor has also a full staff of other judicial and administrative officials. Each provincial organization is complete in itself, though in several instances two provinces, each with its own Governor and usual officers, are combined together forming a vice-royalty over which a viceroy or Governor-General has control. Such is the case with Kwang-Tung and Kwang Si, and others. Each province is divided into districts, departments, and circuits. Each district is about the size of a county, of which there are about 80 in a province. About 6 districts are grouped in a department and ruled over by a prefect, and three departments form a circuit of which an intendant is in charge. Thus the district is the unit of provincial subdivision over which a mayor, or as more commonly called, a district magistrate, is placed.

The various degrees of Chinese civil officials, mandarins, as they are commonly called by foreigners (Kwan foo being the Chinese word) are distinguished chiefly by the color of a ball, or button, worn upon the top of the official cap. There are nine of these grades or ranks, arranged as follows:—an official of the first or highest rank wears a ruby button; of the second, a pink coral; of the third, a sapphire; of the fourth, an opaque blue; of the fifth, a crystal; of the sixth, an opaque white; of the seventh, plain gold; of the eighth, a frosted gold; of the ninth, a frosted silver. There are twelve orders of nobility confined to the family and clan of the Emperor, and also five ancient orders of nobility open for bestowal as honors to the civil and military servants of the State. But these are empty honors only, carrying with them neither position nor emolument of any sort whatever. Members of the Imperial family are not permitted to hold office outside of the Capital. As has been said, the theory upon which the fabric of government is based is paternal, the Emperor being the Son of Heaven and hence the father of the entire race. And what he is, that every viceroy, governor, prefect, intendant, magistrate, and every other official is, each in his own sphere, to the people, a representative of the Emperor or a 'deputy father,' and their government is strictly and essentially paternal.

*Local Self Government.*—These representatives of the Emperor, or 'deputy fathers,' in the provinces have as little to do with the actual government of the people as possible, in the main limiting themselves to seeing that order is preserved and the taxes duly paid. In no

known country is local self-government so complete and universal as in China, especially in the rural regions. Each hamlet and village governs itself, through a self-appointed committee of the old men which becomes a sort of municipality, and is responsible to the provincial authorities for the payment of taxes, repairs of roads and bridges, the conduct of the young men, especially, and in fact all matters which concern the community. The family, not the individual, is the unit of humanity in China, and thus each group of families forming a village, is put in the hands of the elders and they become at once the head of this political family and in every way responsible for it to the State. The system is as old as the race, and as satisfactory as it is old.

*Literary Competitive Examinations.*—The immense number of officials needed for the public service in China are all drawn from the people themselves by a system of examinations. It is literally true that the common people of the Empire govern themselves, those among them who shall have rule over their fellows, being selected in a series of examinations in which only knowledge and ability count, the poor and the rich standing upon the same level and family influence counting for nothing. This system of examinations was established as it exists today in A.D. 600, though it had been intermittently in operation before that time. There are three examinations, the first of which takes place annually in each district city, and confers the degree of 'Hsiu tsai' or 'budding talent' upon successful candidates; the second occurs each three years in each provincial capital and confers the degree of 'Chu jen' or 'promoted men,' while the third and final examination occurs each third year in Peking only, and confers the title of 'Chin shih' or 'entered scholars.' Only those can enter for the second and third who have passed the first and second and such is the eagerness for success that it is a common occurrence that men spend their lives in study and efforts to gain the coveted degrees. All officials of every rank in the Empire above that of police magistrates are chosen from among these graduates.

Much has been written by foreign authors upon the Chinese system of government, with various conclusions, Mr. Meadows, an English writer, long a resident in China, has entered very fully into what may be termed *The Philosophy of Chinese Government*, which he sums up in the following principles, and believes them to be the true causes of the wonderful duration of the Chinese Empire: I. That the nation must be governed by moral agency in preference to physical force. II. That the services of the wisest and ablest men in the nation are indispensable to its good government. III. That the people have a right to depose a sovereign who, either from active wickedness or vicious indolence, gives cause to oppressive and tyrannical rule. To these he adds an institution, as essential to the practical operation of the system,—the public service competitive examinations.

*Education.*—As pointed out in the last section under *Government*, in China education is the only road to official employment, rank, and influence. It might also be stated that the Chinese have almost a religious reverence for any scrap of paper which bears upon it either writing or printing; that they were, by centuries, pioneers in the discovery of the printing press; and have an enormous literature. Yet the Government has no public school system, and interferes in no way with the education of the young. That is left exclusively in the hands of parents. In every village and hamlet is at least one school for boys—none for girls. While the parents employ their instructors, and decide what their children shall study, the Government steps in with the examinations, for which it has provided a very perfect and elaborate system and body of officials, and by determining the character and scope of it, has fixed the course of study. The entire scope of Chinese education is based upon the writings of Confucius, and hence consists of a course of study in social and political ethics, is limited to instruction in morals, in teaching each student his duty and relations to fellow men and to the nation.

The most modern text-book used was prepared by a village school master about A.D. 1040, and has never been revised, while the more important text-books are the writings of Confucius, who lived and taught some 500 years before the birth of Christ. It is, however, but just to say that the entire system of Chinese education is now undergoing a radical change and being re-modeled upon modern lines. The head of the Government system of examinations is to be found in the Han Lin Yuan (Imperial Academy) at Peking.

*Army.*—Officially the Empire has an enormous army, but the war with Japan proved that the available fighting force was small in numbers, and surprisingly deficient in equipment and discipline. The latest estimate, published 1895, shows that officially the army is composed of the eight Banners, comprising 323,800 officers and men; and the Ying Ping, or National Army, comprising 6,459 officers and 650,000 privates. Another division designates an active army, comprising the armies of Manchuria, of the Centre, and of Turkestan; and a territorial army, locally known as Braves, and in reality local militia, supposed to number 200,000 officers and men on a peace footing, and 600,000 in war. The army of Manchuria has an estimated strength of 70,000 men, is divided into 2 corps, and has headquarters at Tsitsikar and Moukden; that of Inner Mongolia has strength of 50,000, capable of being doubled in war, and has headquarters at Kalgar. The army of Turkestan, scattered along the extreme western territory, is virtually kept on police duty, and in time of war could not be spared for operations elsewhere. As evidence of the smallness of the active army, it was reported that in the 20 principal battles with the Japanese between 1894, July 24, and 1895, March 6, the total Chinese losses were 18,000.

*Navy.*—The entire naval force of the Empire is organized into district squadrons, which were raised and maintained by the provincial viceroys, and its effectiveness was minimized at the beginning of the war of 1894–5 by the Tsung-li-Yamen directing it to remain in Chinese waters. Before the war the fleet was divided into the North Coast and Foo-Chow squadrons and the Shanghai and Canton flotillas. The North Coast squadron comprised 4 barkette sea-going armor-clads, a turret-ship, 3 deck-protected cruisers, 4 torpedo cruisers, 11 gun-boats, and a torpedo flotilla; the Foo-Chow squadron had 10 cruisers, 3 gun-boats, 9 dispatch boats, and 3 revenue cruisers; the Shanghai flotilla had an armored frigate, a gun-boat, 6 floating batteries of wood, and 3 transports; and the Canton flotilla, 3 deck-protected cruisers and 13 gun-boats. A general classification of this would show: 1 first-class, 1 second-class, 3 third-class battle ships; 9 port-defense vessels, 9 second-class; 47 third-class cruisers; 2 first-class, 26 second-class, 13 third-class torpedo-boats; and other vessels making a total of 111. In the war, her losses by capture, surrender, and destruction aggregated 29 vessels, several of which were considered among the most formidable war-ships afloat.

*Note.*—Since the war with Japan and the Boxer Rebellion, the Army and Navy have been undergoing entire re-organization and reconstruction. Facts stated above are, of necessity, applicable only to conditions prior to these events).

*Revenue.*—Only the receipts from the foreign customs are published. The ordinary revenue and its sources are estimated as follows: Land tax $15,200,000; maritime customs $17,860,000; transit levy on foreign and domestic goods and opium, $8,360,000; salt taxes and levies $7,296,000, Maritime and inland native customs, $4,560,000; rice tribute, $2,128,000; and licenses, $1,520,000—total $56,924,000. Another estimate places the revenue from all sources at about $125,000,000 per annum. The principal expenditure is for the maintenance of the Army. The Navy is maintained by the viceroys. The Empire had no foreign debt till 1874. From that year till early in 1895 (when a war loan of $15,000,000 was raised) the total loans aggregated—including the first war loan—$45,000,000.

*Commerce.*—The chief imports are cotton goods, opium, metals, petroleum oil, seaweed, fishery products, woolen goods, coal, and raw cotton; and exports raw and manufacturing silks, tea, sugar, straw-braid, clothing, paper, chinaware, and pottery, and cow and buffalo hides. The imports have reached an annual value of $98,223,771, the exports a value of $100,283,184. During a typical year, 37,902 vessels, of a total tonnage 29,318,811, entered and cleared various open ports; of these 29,761, of a tonnage of 28,277,050 were steamers. The nationality of these was divided as follows: British, 19,365; Chinese, 14,270; German, 2,142; Japanese, 623; French, 167; United States, 63.

There is no *coinage* in China except the copper 'cash' or chien which is in value about the twentieth of a cent; and all but the most trifling payments are made in silver bullion by weight or in Mexican dollars. Chinese accounts are kept in taels (ounces), mace, condareens, (the latter two being decimal parts of an ounce), and cash. To add to the confusion in keeping accounts, each city and each large town or village has its own special ounce weight. Peking, the Capital, has no less than six different ounces. In recent years the Shanghai ounce was worth $.685, while the customs, or Haikwan, ounce was worth $.763, and the standard or treasury ounce of the Chinese Government agreed with neither.

*The Principal Manufactures* are: silk, cotton, linen and pottery, for which latter the Chinese are especially celebrated. The finest porcelain is made in the province of Keang-Se. The Chinese invented printing in the beginning of the 10th century after Christ, and in A.D. 932, a printed Imperial edition of the sacred books was published. The skill of the Chinese in handicraft is astonishing. Their rich silks and satins, light gauzes, beautiful embroidery, elaborate engraving on wood and stone, delicate filigree-work in gold and silver, carvings on ivory, fine lacquered ware, antique vessels in bronze, and their brilliant coloring on the famous put paper, command our admiration.

*Religion.*—There are three standard forms of religion, as they may be termed, in current belief among the Chinese. Confucianism, commonly spoken of among foreigners as one of the great religions of China, is quite incorrectly so mentioned, since it is not that under any possible interpretation of the word. It is a system of ethics, a code of social and political morals, and an excellent one. The founder of it repeatedly and most strongly disclaimed all intention of founding a system of religious belief, and nothing can be found either in his life or writings which will justify the claim that he, intentionally or unintentionally, either established a religion or that he today or at any time in the past has been worshipped as a divinity. (Confucianism is not here included as one of the religions of China. For an account of Confucius and his system of ethics see CONFUCIUS).

The three religions mentioned are Buddhism, Taoism, and the Worship of the Heavenly Bodies and of Ancestors. Of these the first and second are exotic, the third only being indigenous. Buddhism was brought into China from India about A.D. 65, by a Mission of Chinese officials, headed by a Prince and sent by the Emperor not to India but 'to the west' in search 'of books and teachers of the truth'. Dreading the impassable deserts and mountain passes at the west, this mission traveled nearly south, entered India, and in this way occurred the introduction of Buddhism to China. Though having a greater mass of adherents than any other 'foreign religion,' as the natives still call it, and patronized at times by all, it is fast losing

any hold upon the people which it ever had. Its temples and shrines are fast falling to decay and few are being built or repaired. Its worshippers are chiefly aged women, and children; its priests ignorant, vicious, and held in universal contempt. Various Emperors have had occasion to warn their people, especially the women, from frequenting the temples. There are several divergent forms of Buddhism found in different sections of Asia. The northern or Mongol form is that current in China. Its sacred books are, in common with those in use in Tibet and Nepaul, either written in Sanscrit or translations, or, more commonly transliterations from that ancient language. Among other peculiarities of the northern form of the faith are to be found a Goddess of Mercy and a Western Paradise, supposed, upon good authority, to have been borrowed, many centuries ago from Christianity. Taoism was originated by a Chinese, named Lao-Tz who was born B.C. 604. Though Chinese he spent his student days in India and Central Asia, whence he brought the new belief. In theory his religion was pure reason, of which his theory of the creation may be given as a sample. 'Reason has produced one, one produced two, two produced three, and three made all things.' In its early days, Taoism was claimed to be pure reason, but it has degenerated or developed, into the grossest forms of superstition. Its priests are, as a rule, wholly unlettered, few or none of them acquainted with the principles of their belief. They are the fortune-tellers, exorcists, hypnotists, and professors of spells and incantations, evil spirits, witches and the dead, in every Chinese community.

The one indigenous religion may also be properly said to be the universal religion of the Chinese, since all worship it, Buddhists and Taoists among the rest. And it is the State religion, since twice each year, at the winter and summer solstice, the Emperor, as the Father of the race, worships and offers sacrifice upon the altar of Heaven, and makes, for himself, report to Heaven of his conduct of affairs. There is a most striking similarity between the ritual as followed by His Majesty and that prescribed in the Books of Moses in the Bible, so close a resemblance in fact that it is by some believed that in ancient times they were identical, and that, with the Chinese, the worship of God in Heaven has in the long process of ages degenerated into worship of the material and visible heaven. As the Son of Heaven, the Emperor is the High Priest, and the only Priest, in this ceremony. In a similar way the worship of ancestors is participated in by the Emperor and all of his subjects twice each year. Probably these two forms of false worship, that of the Heavenly bodies, or forces of Nature, and that of ancestors, are the most ancient known among men.

Besides these forms of superstitious belief, and not including the numerous converts to Christianity, there are many millions of Mohammedans in the north and

northwestern parts of China, the descendants of those who, many centuries ago migrated from Persia and Turkestan. There is practically no friction between the adherents of these several cults. And the Government is entirely tolerant in matters of religion, where no political scheme is involved.

*History.*—The early annals of China, like those of most other countries belong rather to mythology than to history. It is held that beginning with Pan-ku, the first of all beings, the country was ruled over first by gods, and then personages descended from gods, who revealed to men the essential arts of life. Of those mythical rulers the most famous is Fu-Hi. The historical period may be said to commence with the Hia period or dynasty, begun by Yu the Great, about B.C. 2200, though a great infusion of the fabulous still continues in this period. Some date the real history of China from the Tchow or Chow dynasty, which began with Wu-Wang about B.C. 1100. It was during the reign of Ling-Wang (B.C. 571–5), one of this dynasty, that Confucius was born. China seems during this period to have been divided into a number of principalities, having one Emperor over all, who possessed only nominal authority. The Kings of Chin gradually gained the ascendency, and at last one of them reduced the other States to subjection (B.C. 247), and assumed the title of Huang, or Emperor. It is from the Chin dynasty that the country has taken its name, China. This first Emperor finished the Great Wall (see above), as a protection against the Tartars, who had all along, under the name of Hsiung-Nu (Huns), been a source of danger and annoyance to the richer and more pacific Chinese. Various dynasties followed, with frequent division and re-unions of the Empire, varied by incursions and partial subjugations by the troublesome Tartars. At last, the Mongols or western Tartars, being called in to aid the Chinese (1209), became finally (see KUBLAI KHAN), masters of the whole country (1279), and reigned over it till 1368, when they were expelled by the Chinese, and the Ming native dynasty succeeded, which lasted 276 years, and fell at length through its own misgovernment. A general of the last Ming Emperor, who was employed in keeping the Manchus (q.v.) in check, made peace with them, and obtained their assistance against the native usurper who had deposed his sovereign. The Manchus established themselves in Peking (1644), and after a struggle lasting seven years, acquired the sovereignty of the whole Empire. More than one powerful Emperor of the Manchu race has ably conducted the government of the country; but Hien Fung, who ruled 1850–61, was reported to have passed his time in a state of drunken imbecility. The late Emperor, Tung Chib, succeeded to the throne when only a child five years old, but the government was ably carried on under the co-regency of the Empress-Dowager, Tze-An, the Empress Mother, Tze-Ese, and the enlightened Prince

Kung, brother of Hien Fung. Tsai-Tien, cousin of Tung-Chib, ascended the throne 1875, under the Imperial name of Kwang-Hsu. As he was then only about three years old, the Empresses continued to act as regents.

Of recent events in Chinese history, the most remarkable is the rise, progress, and overthrow of the *Tai Ping Rebellion*. The famous leader, Hung Sin Chuan, was a man of humble origin, and an unsuccessful candidate for government employment. Some Christian tracts, it is said, led him to renounce idolatry and he founded a society of worshippers of God, which, in the autumn of 1850, was brought into collision with the Imperial authorities, and immediately assumed a political character. Hung persuaded himself and his followers that he had received a divine commission to uproot idolatry, extirpate the Tartar intruders in the country, and establish the new dynasty of Tai Ping, or Universal Peace. He assumed the title of heavenly or divine prince (Tai Ping Wang, sometimes called Tien Wang), and bestowed the titles of eastern prince, western prince, southern prince, northern prince, and assistant prince on five of his chosen leaders. The fanatical principle of divine revelations and other extravagances followed. They spoke of Tien-ma, the wife of the heavenly father, they held that Tien Wang was the son of God as really as Jesus, and worshipped him accordingly. Polygamy was a dark feature of their system, the Tien Wang himself having married 30 wives. The course of this religio-political rebellion, the victorious march of the Tai Ping army from Kwang-Se to Nanking 1850–53, and its subsequent career, cannot here be traced. After a series of wasteful and revolting barbarities, it was finally suppressed, 1865, by the Imperial troops, led by British and American officers, of whom the most conspicuous and able was Colonel Gordon. See TAI PING.

*Foreign Intercourse.*—In early times, the Chinese do not appear to have been opposed to intercourse with foreigners; but the conduct of the Spaniards, Dutch, and Portuguese, 1506–80, excited their hostility. The Manchu Government restricted British trade and intercourse to Canton, where it was carried on through the medium of the *hong* merchants on the one side, and the British East India Company on the other. Differences arose, however, from time to time between these two commercial bodies, occasioned partly by the exactions of the Mandarins on the one hand and the constant and increasing smuggling of opium into the Empire, upon the other, the drug being contraband and all traffic in or use of it forbidden under the most severe penalties. With a view to a better understanding the British Government, in 1792 dispatched an embassy to Peking under Lord Macartney and another under Lord Amherst, in 1816. In 1834, April 22, the monopoly of the British East India Company in India and China came to an end by the refusal of the British authorities to renew its charter. The

British Government in person took over the control of affairs and British officials were appointed to have charge of the trade in China. Continued dissensions occurred between these officials and the Chinese authorities until early in 1839, when the Chinese Emperor, in view of the fact that in spite of all his efforts to enforce the laws of the Empire, the smuggling of opium into China was still being carried on, sent a special commissioner to Canton with full authority and power to put a stop, by any means and at any risks, to the illicit traffic. Upon his arrival in Canton he found 22 foreign vessels in harbor having as part of their cargoes 20,291 chests of opium, being about 2,536,375 pounds of opium worth at the current market price $9,000,000. An immediate demand for the surrender of the entire quantity of opium was made, which, after a futile attempt to bribe the commissioner, was granted, and Lin caused the entire quantity to be dumped into trenches, mixed with lime and sea water and so destroyed. When the news of these events reached London, a British military and naval force was at once dispatched to exact reparation. After a struggle, extending from June, 1841, for more than a year, a treaty was concluded at Nanking by which China was forced to pay $23,000,000 and cede the island of Hong-Kong to Great Britain and also to open five Chinese ports to foreign trade. Of this money indemnity, $12,000,000 went to Great Britain to pay the cost of the war; $3,000,000 went to pay debts said to be due by certain Chinese to British merchants; and the remainder was collected as compensation for the opium seized and destroyed by Commissioner Lin at Canton in May, 1839.

With five open ports foreign trade with China rapidly increased to large proportions, and though the Chinese evaded the treaty whenever practicable, and though the smuggling of opium continued under the patronage of the British Government and grew to an enormous extent, in violation of law and in spite of the most determined efforts of the Chinese authorities to suppress it, no serious event occurred to interrupt commercial intercourse until 1856. In that year the Chinese authorities of Canton seized a smuggling schooner called the *Arrow*, with her crew and cargo. She was owned and manned by Chinese though illegally flying the British flag and was, when seized, loaded with opium. Sir John Bowring in charge of British interests demanded the release of the crew, who were as has been said, Chinese subjects, the surrender of vessel and cargo, a considerable sum as indemnity and an apology to the British Government. Under pressure from the British forces at hand, the Chinese Imperial commissioner Yeh, delivered up the men but refused all apology and indemnity. Yeh, continuing obstinate Canton was stormed 1857, Dec. 28, by the allied French and English forces and the Chinese Imperial commissioner captured 1858, Jan. 5. The government of the city was, still carried on by Chinese officials, but under the author-

ity of the plenipotentiaries and commander-in-chief. The former now proceeded to the north of China, to put themselves in more direct communication with the Imperial Government, which still continued obstinate. The forts at the mouth of the Peiho were taken 1858, May 20, and at length an important treaty was signed at Tien-Tsin, 1858, June 26, which stipulated that the Queen of Great Britain may (Art. II.) appoint diplomatic agents to the court of Peking who (Art. III.) shall be allowed to reside at the Capital, where also Her Majesty may acquire a building site. The Christian religion (Art. VIII.) shall be protected by the Chinese authorities. British subjects (Art. IX.) shall be allowed to travel for pleasure or business to all parts of the interior, under passports issued by their consul. British merchants' ships shall trade (Art. X.) upon the Great River (Yang-tze), but as its lower valley is disturbed by outlaws, no port except Chin-Keang shall be opened for the present. Chin-Keang to be opened in a year from the date of the signing of the treaty.

By this treaty the vexed question of transit dues was settled, it being agreed that the British merchant may purchase at the rate of two and one-half per cent. *ad valorem*, in the case of imports at the port of entry; and in the case of exports, he may purchase a certificate enabling him to pass his goods, duty-free, to the port of shipment. By a separate clause, the Chinese Government agreed to pay two million taels (about £650,000), of indemnity for losses sustained by British subjects at Canton, and a like sum toward the expenses of the war.

The repulse on the Peiho (June, 1859), by a Tartar force concealed in the Taku forts, of the expedition forming the escort of the British and French ambassadors, who were on their way to Peking, to ratify with the Emperor of China the treaty of Tien-Tsin, entailed another costly demonstration in the Chinese waters. The Taku forts were captured by the allied English and French forces, 1860, Aug. 21, and Peking itself, Dec. 1860. The treaty of Tien-Tsin was ratified, two additional articles being inserted, one of which legalized the opium trade, which had been the main purpose of the British Government in all these years of strife. Since 1861, a gradual but beneficial change has come over the spirit of the Chinese Government. Prince Kung proved a vigorous and successful regent. The Army has been recognized, and is now subjected to European drill (see above, *Army*); a respect for the observance of treaties has sprung up; a national flag has been adopted, and a desire shown on the part of the Chinese to make themselves acquainted with international law. In 1866, emigration to all other countries was allowed. Shanghai has telegraphic communication with Europe and America and Tien-Tsin and Peking are, since 1880, connected with Shanghai.

In 1883, the Chinese proposed a telegraph from Canton to Shanghai. The first Chinese railway opened at Shanghai 1876 and was closed again by the government, having been

built under misrepresentation. Chinese are now found on almost every shore of the Pacific, where their industry, skill, and sobriety secure them abundant employment. They are especially numerous on the Pacific coast of the United States, where harsh measures, including first a heavy tax on arriving, and later, laws aiming at almost entire exclusion, were adopted. Between 1855-80, more than 100,000 Chinese had established themselves in the United States. See CHINESE EXCLUSION ACT. The Chefoo Convention, 1876, opened three additional ports. In 1879, China seemed likely to go to war with Russia about the possession of Kuldja; but a treaty was concluded 1881 between the two countries, in which the territory of Ili, including the town of Kuldja, was given up to China, while the latter agreed to pay an indemnity. In 1883, China resisted the occupation of Tonquin by the French; but in 1884, and again in 1885, signed a treaty recognizing a French Protectorate over Tonquin and Anam, and agreeing to open her own three southern provinces to French trade. The rebellion in the northern provinces which broke out at the close of 1891 made heavy demands on the Government. The officers were instructed to take no prisoners, and the insurrection was repressed at the estimated cost of nearly 100,000 lives. Meanwhile, in the south there was an uprising against Christian missionaries—in that region Roman Catholic—and in a massacre, about 300, mainly native converts, but a few priests and nuns also, lost their lives. A little later similar disturbances occurred in Manchuria. The Chinese Government suppressed the riot. Enormous claims for damages were filed, for which payment was enforced from the provincial authorities. Investigation showed the existence of secret societies, and of a band of conspirators, many of whom were government officials of high rank, whose chief object was the expulsion of all foreigners from the country. In 1892, September, a destructive inundation of the Yellow River ravaged portions of three provinces, and washed away 12 towns.

*The War with Japan.*—The dispute between China and Japan that culminated in the war of 1894-5 was several centuries old and was based on a mutual desire for supremacy in Korea. China claimed a suzerainty over Korea, which had been acknowledged practically by both Korea and Japan for many years; and Japan, acquiring large commercial interests in Korea, was anxious to secure a more progressive form of government there than the Chinese officials were willing to grant. In March, 1894, a conspiracy to overthrow the King of Korea was discovered; on June 6th the King applied to China for assistance; and immediately Japan sent a large force of troops into Korea, and occupied its capital.

Active hostilities opened July 25, when three Japanese cruisers met off Plungdo three Chinese cruisers convoying troops to Korea. One of the Chinese vessels was captured, a gun-boat was driven ashore and destroyed, a protected

cruiser steamed away during the engagement, one transport was sunk, and two transports reached port safely. The first land engagement deserving the designation of battle, was before the walled city of Ping-Yang, on the Tatung River, on the road leading from Seoul to the frontier of Manchuria. The city was defended by 16,000 Chinese troops. The Japanese marched on the city in three columns, opened the attack by a cannonade on 16 September, made a simultaneous attack on the following morning, and within an hour were masters of the city. While the Japanese were marching on Ping Yang, the Chinese authorities, fearing for the safety of the city, dispatched a number of transports with re-inforcements from Talien Bay, near Port Arthur. The transports were sent up the Yalu River, while a convoying fleet of 10 vessels remained at anchor about 10 miles to the west. On the morning of Sept. 17, a powerful Japanese fleet approached the Chinese fleet and began attack at long range. Two Chinese cruisers ran away, another was speedily sunk, two others were set on fire by Japanese shell, and one Japanese vessel was seriously damaged. At nightfall, the fleets retired, the Japanese to the Tatung River, the Chinese to Port Arthur. The next notable event was the investiture and fall of the great Chinese stronghold—its Gibraltar—Port Arthur, on the promontory of the Regent's Sword. The Japanese army was said to number 15,000 officers and men, and the Chinese 13,000. There was a considerable Chinese fleet at the port, and the Japanese assembled a flotilla of torpedo-boats. During the investment and assault, the fleets were not actively engaged. After two days of almost incessant fighting, the Japanese captured the main works (Nov. 21), seized 12 of the enemy's ships (the others slipping away to Wei-Hai-Wei), and secured an enormous quantity of guns, ammunition and general stores. From Port Arthur the Japanese proceeded to invest the other great naval strongholds in the Gulf of Pe-Chi-Li, particularly Wei-Hai-Wei, which they attacked by sea and land 1895, Jan. 20. On Feb. 14, they received an offer from Admiral Ting, the Chinese authority at Wei-Hai-Wei, to surrender, and on the 17th took possession of the harbor, the main works, the forts on Liu-Kung-Tao Island, the torpedo stations, all the government buildings, and 10 war vessels. During the entire winter the Japanese carried on active and uniformly successful operations in Manchuria. On March 21, they occupied Fisher Island, one of the Pescadore Group between Formosa and the mainland, and a few days afterward seized Panghu, the principal island.

As soon as western nations became convinced that the struggle between China and Japan was likely to prove a long and bitter one, and one also that would seriously disturb the commerce of the world, rumors of European intervention became rife. The United States Government, as the one least interested politically in the result, tendered its friendly offices to bring about a cessation of

hostilities. The offer was at first declined, but subsequently, and with the consent of both powers, the United States ministers to China and Japan undertook negotiations for peace. Early in 1895, March, China appealed to the European Powers and to the United States Government for co-operation in peace negotiations. Later in the month she appointed the viceroy, Li Hung Chang, a plenipotentiary to negotiate for peace, invested him with absolute and binding authority, and engaged John W. Foster, ex-Secretary of State of the United States, to assist him in his task. The viceroy was received with honors befitting his rank and mission on his arrival at Simonoseki, where the negotiations were held. On March 24, while proceeding from the conference hall to his hotel, the viceroy was shot in the face by a fanatic, the wound delaying the conference, but not proving serious to the victim. At the first conference Li Hung Chang asked for an armistice, which the Japanese plenipotentiaries were willing to grant on conditions that Li Hung Chang deemed too severe. After the attempted assassination of the viceroy, the Emperor of Japan, as an evidence of national horror for the act, ordered an armistice till April 20, without conditions. A treaty of peace was signed by the plenipotentiaries on April 16, on the following terms: (1) The independence of Korea; (2) Japan's retention of the conquered places; (3) Japan's retention of the territory east of the Liao River; (4) Permanent cession of Formosa; (5) Indemnity of $100,000,000 Mexican; and (6) An offensive and defensive alliance between China and Japan to guarantee the independence of Korea.

In consequence of the warning of Russia, silently endorsed by France and Germany, Japan waived article 3 of the treaty, in lieu of which the indemnity was increased to $400,000,000, Mexican. In this form the treaty was, with much delay and opposition upon the part of China, eventually ratified.

In 1898 Russia secured the lease of Port Arthur and Talien-wan with their adjacent waters, for the term of 20 years, which was to be extended by mutual agreement. To the north is a neutral zone where Chinese troops were not to be quartered without Russia's consent. In the same year Great Britain obtained a lease of the islands and waters of Wei-Hai-Wei in Shan-Tung province, on the same terms, and the cession of territories on the mainland opposite Hong-Kong, while France obtained a 99 years' lease of the Bay of Kuang-chau-wan opposite the island of Hainan. Meanwhile (1897) Germany obtained a 99 years' lease of the port of Kiau-chau in Shan-Tung. The young Emperor, Kuang Hsu, who had advocated reforms after European methods, was practically deposed in 1898 by the Empress Dowager. The already strong anti-foreign sentiment in the Empire reached a crisis in 1900. The Boxer uprising (see Boxers) was accompanied by the massacre of missionaries, their children, and their con-

verts, and by the murder of two members of the legations at Peking. These atrocities were openly sanctioned by Prince Tuan and some other princes and ministers, and actively opposed by others. The final escape of foreigners in Peking with their lives was undoubtedly due to the active effort of Prince Ching. Finally, communication between Peking and the coast was cut off and the foreigners in that city were besieged in the legation grounds. Armed intervention by the Powers followed, 50,000 troops being employed. Tien-Tsin was taken by storm July 13-14, and Peking was relieved Aug. 14, the court having previously fled to the province of Shen-Si. Negotiations for peace were soon begun; on December 4 the Powers made formal demands including the punishment of the leaders in the massacres, and payment of a heavy indemnity. In 1901, January 14, a peace protocol was signed. Russia, which had established a virtual protectorate over the port of Nin-Chuang and the two southern provinces of Manchuria, agreed, under certain conditions, to withdraw at the close of 1903. A report, 1903, April 4, that a demand for the sovereignty of Manchuria and the exclusion of other nations from commercial privileges had been made on China, caused great anxiety in diplomatic circles, and led Russia to deny the charges though it subsequently was proved to have been true.

Russia failed to evacuate Manchuria 1903, Oct. 8, as stipulated, and instead, strengthened her forces there, and made a great naval demonstration. Japan, whose interests were menaced by Russian aggression, after long overtures, ended diplomatic relations and the Russo-Japanese War (q. v.) ensued with its disastrous results to Russia. Under the treaty of Portsmouth (q. v.) Manchuria is returned to China. After 1905, the national progressive movement, which had been actively developing for over ten years, exhibited considerable progress along the line of Western ideas and ideals, and as a consequence of the broadened intercourse with, and the powerful influence exerted by Japan. A strong evidence of the arousing of a national consciousness was the boycott against American goods organized in July 1905 by the trade guilds in the five principal treaty ports, in retaliation for the obnoxious restrictions imposed on Chinese immigration in the United States and its dependencies by the exclusion treaty of 1896 which lapsed in 1904 but whose provisions were still enforced. In 1906-07 army reform, the extension of railways, telegraphs, telephones, etc., the adoption of a Romanized system of letters, the agreement with Great Britain for the suppression of the opium traffic, and the stringent laws enacted against the use of the drug were marked features of national development.

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CHINESE EXCLUSION ACT: law of the United States, 1892, May 5, relative to immigrants from the Chinese empire; commonly called the 'Geary bill.' The act continues in force for 10 years all laws prohibiting and regulating Chinese immigration; requires in general the removal, ordinarily to China, of any Chinese not lawfully entitled to be in the United States; declares that any Chinese person arrested under the laws relative to this subject, shall be adjudged to be unlawfully in this country, unless he shall establish by affirmative proof his lawful right to be here; ordains that any Chinese person so convicted and adjudged under these laws, shall be imprisoned at hard labor not more than one year and then deported from this country; provides that on application for right of habeas corpus by any Chinese person seeking to enter the United States, to whom that privilege has been denied, no bail shall be allowed, and such application shall be determined promptly; requires all Chinese laborers entitled to remain here to apply, within one year from the passing of this act, to the U. S. collector of internal revenue for the district for a certificate of residence; and ordains that, after one year, any Chinese laborer found in this country shall be adjudged to be here unlawfully and shall be deported, unless he shall establish to the satisfaction of the court and by at least one credible white witness that by some unavoidable cause he has been prevented from procuring or now holding his certificate, and that he was a resident of the United States when this act was passed.

This law was met by a vigorous protest from the Chinese minister at Washington. It also encountered serious difficulties in its attempted execution, but subsequently the United States supreme court affirmed its constitutionality. A new treaty between the United States and China, based on this law but with reciprocal modifications, and to last 10 years, was signed in Washington, 1894, Mar. 17, and ratified by the senate Aug. 13; it lapsed in 1904, but its provisions are still enforced. See IMMIGRATION.

CHINESE LANGUAGE, WRITING, AND LITERATURE: a monosyllabic language, with essentially hieroglyphic characters, and a comprehensive literature. The Chinese language belongs to those Asiatic languages commonly called monosyllabic, because each word is uttered as a separate syllable or sound, and expresses in itself a complete idea or thing. Of such simple words or sounds there are about 450, the number varying in each dialect. But the tone or accent of many of these words may be varied by the speaker in different ways, so as to produce a corresponding variety in their meaning, by which means the number of simple words or sounds amounts to two or more thousands. There is no distinction of parts of speech in the Chinese language, and no recognition of the principle of inflection, Chinese words being incapable of any modification of *form*. The relations of words are ascertained by their position in a sentence. Hence, Chinese grammar is *solely* syntax. Thus *ta*, according to its position in a sentence, at one time serves the purpose of an adjective, meaning 'great;' at an other, a substantive, meaning 'greatness;' and again of a verb meaning 'to enlarge,' and 'to be great,' or of the adverb 'very.' There are certain words, however, which have at length lapsed into so vague and general a signification, that in conversation and literature they are now used in some cases as particles to determine the relations of other words; but in the older literature this is very rare, and is against the genius of the language. From what has been said, it will readily be inferred that the gender, number and case of words are not determined by the *form* of the words themselves. They are, in fact, denoted by the addition of other words. Thus, *people* in Chinese is *multitude man*, *son* is *man child*, *daughter* is *woman child*. The *best of men* is in Chinese *a hundred man good*. The purest Chinese is said to be spoken at Nankin, but the same idiom, called 'the language of the mandarins,' is spoken by the educated in all parts of the empire.. For a knowledge of Chinese grammar, see Schott's *Chinesische Sprachlehre* (Berlin, 1857); Summer's *Handbook of the Chinese Language* (1863); Julien, *Syntaxe Nouvelle de la Langue Chinoise* (Paris, 1870); Morrison's *Dictionary of the Chinese Language* (Shanghai, 1865). Williams's *Syllabic Dictionary of the Chinese Language* (Shanghai 1889), and Giles's *Chinese-English Dictionary*, (Shanghai 1895).

In its simple forms the Chinese written character generally does not indicate the sound of the word, but gives a kind of hieroglyphic or pictorial representation of the idea or thing to be expressed. Hence there are required as many of these characters or symbols as there are ideas to be represented. Since many words similar in sound are different in signification, while in writing each idea has its peculiar symbol, the number of words represented by writing—without reckoning those peculiar to certain dialects—is perhaps ten times greater than those distinguished by the ear. The number, in fact, is reckoned at 50,000, but these are far from being all in general use. In writing

and printing the characters are usually arranged in perpendicular columns, which follow one another from right to left.

In its origin, Chinese writing is hieroglyphic or ideographic with the addition of a limited number of symbolical and conventional signs; the larger number of Chinese characters are formed by the combination of such hieroglyphs and signs. But as one such character by itself seldom determines the sound, an additional word is conjoined for this purpose; so that the great mass of Chinese written words consist of an ideographic and a phonetic element. Native grammarians divide their characters into six classes. The first class comprises simple pictorial representations of sensible objects, such as sun, moon, mountain, etc., and containing 608 characters. The second class includes such characters as are formed by the combination of two or more simple hieroglyphs, which together convey, in a more or less intelligible manner, some other idea; for example, the hieroglyph for sun, combined with that for moon, conveys the idea of light; mouth and bird, that of song, etc.; of these there are 740. The third class embraces those characters which indicate certain relations

Chinese Characters.

of position, as above, below, the numerals, etc.; of these there are 107. The fourth class consists of characters which, by being inverted, acquire an opposite signification, as right, left, standing, lying, etc., and contains 372. The characters of the fifth class are termed derived characters; the meaning of the simple or compound characters used to express physical objects, is transferred to mental objects, or to other physical objects with which they are associated, e.g., the hieroglyph for a heart signifies the mind—that for a door signifies a family, etc.; of these there are 598. The characters of the sixth class include those which are composed, as above mentioned, of sign and sound. Almost all names of plants, fishes, birds, and many other objects which it would be difficult to represent hieroglyphically, are denoted by the compound characters of the sixth class, which amount to 21,810 in number. As this class, however, consists merely of repetitions of the other five classes, the immense number of Chinese characters may be reduced to 2,425 simpler forms, and whoever learns these may be said to know the forms of all.

The hieroglyphical characters in their oldest form were easily recognizable figures: thus, the hieroglyph for sun was as in the fig. at *a;* for moon, as at *b;* for light, a combination

of sun and moon, as at *c;* for to listen, folding-doors and an ear, as at *d;* for white a very squint eye, in which hardly anything but the white is seen, as at *e;* for friends, the two valves of a bivalve shell, as at *f*. In the course of time, through hasty and careless tracing, the objects denoted by the hieroglyphs have almost ceased to be recognisable. The modern hieroglyphs corresponding to the above are as represented at *a'*, *b'*, *c'*, etc. See Abel Rémusat's 'Mémoire sur l'Ecriture Chinoise,' in the *Mémoires de l'Acadèmie des Inscriptions*, vol. viii.; and for a view of the Chinese characters, both ancient and modern, Hager's *Monument de Yü* (Par. 1802); Chalmers, *The Study of the Chinese Characters*, and Watters, *Essays on the Chinese Language*.

The Chinese literature, in a geographical, ethnographical, and historical point of view, is unquestionably the most comprehensive and important of Asia. The printed catalogue of the emperor Chien-lung's library fills 122 vols.; and a selection of the Chinese classics, with commentaries and scholia, which was begun by order of the same emperor, is said to comprise 180,000 vols., of which, in 1818, had already appeared 78,731 vols. In the five canonical or classical books, called *Ching*, are contained the oldest monuments of Chinese poetry, history, philosophy, and jurisprudence, some portions of which belong, perhaps, to the most ancient writings of the human race. Confucius (q.v.), B.C. 6th c., collected them from various sources, and in this collection they have been faithfully handed down. Next to these in value are the *Szu-shu*, or the four books. These, as they were written by Confucius and his disciples, must be regarded as the most trustworthy source of insight into the intellectual and political life of a Chinese. A complete and elaborate edition of the five *Ching* and the four *Shu* has been undertaken by the great English Sinologue, Dr. Legge, under the title of 'The Chinese Classics, with a translation, critical and exegetical notes, prolegomena, and copious indexes. In seven volumes;' of which five vols. appeared 1861–78. A popular edition, under the title of 'The Chinese Classics translated into English,' has also been published, of which vols. I. and II. deal respectively with the 'Life and Teachings of Confucius' and the 'Works of Mencius.' Almost contemporary with Confucius lived Lao-tse (q.v.) born B.C. 604. He was the founder of a school of philosophy, more spiritual in its character than that of Confucius, but which has now degenerated into the lowest and most vulgar demonology; see *Le Livre de la Voie de la Vetru*, Chinese and French, by Julien (Par. 1842). In mythology, the Chinese have *The Book of the Mountains and Seas*, *The History of the Gods and Spirits*, and some others. In jurisprudence may be mentioned the universal collection of laws, and the criminal code of the present dynasty; see *Ta-Ching-lu-li, being the Fundamental Laws and Supplementary Statutes of the Penal Code of China*, by Staunton (Lond. 1810).

The Chinese literature is very rich also in works on medicine, natural history, astronomy, agriculture, military

science, music, and all branches of mechanics and industry; see Wylie's *Notes on Chinese Literature;* Giles, *History of Chinese Literature*, and *Résumé des principaux Traités Chinois, sur la Culture des Mûriers et l' Education des Vers-à-soie*, by Julien (Par. 1837). In philology the most valuable works are the dictionaries, in which the Chinese characters have been collected and elucidated by examples from the whole treasury of Chinese literature; but the greatest of all works of this kind is the dictionary of the emperor Kang-hi, now regarded as the highest authority for the pronunciation and meaning of the characters. Of the encyclopedias of the Chinese the most conspicuous are that by Ma-tuan-lin (A.D.1300), called *Wen-hsien-t'ung-k'ao*—i. e., an accurate investigation of the ancient documents, with rich supplements; and the *Ku-chin-t'u-shu-chi-ch'eng*, or *Complete Collection of Ancient and Modern Books*—of which latter vast work a copy was secured for the British Museum 1877. But the most valuable portions of the Chinese literature are, undoubtedly, their historical and geographical works, which are indispensable to a knowledge of upper Asia. *Szü-ma-chien* (B.C. 100) compiled, from every recognized authority, a work called *Szu-chi*, or historical memorials, which embraces the history of China from B.C. 2637 to the commencement of the dynasty of Han, B.C. 2d c. This work has been continued by the different dynasties, and forms a complete collection of the annals of the empire to the termination of the Ming dynasty A.D. 1643 It is known under the title of *Erh-shih-erh-shih*, or the 22 histories. The entire collection of the official annals from B.C. 2698 to A.D. 1645, comprising a period of 4343 years, and consisting of 3,706 books, is in the library at Munich.

Amid all their scientific labors, the Chinese have not neglected the art of poetry, in which they possess voluminous collections that have yet to be made known to Europe. In lyrical poetry, the most distinguished names are Li-t'ai-po and Tu-fu, both of whom lived at the beginning of the 8th c. after Christ: see Davis 'On the Poetry of the Chinese,' in the *Transactions of the Royal Asiatic Soc.*, vol. II., and Giles's *History of Chinese Literature.* The romantic poetry of the Chinese, though void of poetic beauty, is valuable for the insight that it gives into their domestic life. Their dramatic poetry has laws peculiar to itself, and resembles partly the romantic drama of the Germans, and partly the *comedia delle arte* of the Italians. They have also a kind of novel in dialogues, which forms a subordinate species of drama. Besides the speaking persons or actors, there is what they call a singing person, who introduces into the piece songs which he sings to popular melodies, and appears to correspond in a rude way to the Greek chorus. The best collection of works in this species of literature is the *Yuan-ch'ü-pai-chang*, i.e., the hundred dramas from the Mongol dynasty (1260–1341), from which all the Chinese dramas known to Europeans have been taken. A Chinese novel affording a graphic

view of Chinese tastes and opinions, was translated by Stanislas Julien, under the title of *Les Deux Jeunes Filles Lettrée*. English readers may obtain pictures of Chinese life from *Yü-chiao-li*, or the Two Fair Cousins, translated from the French; and *The Flowery Scroll*, translated by Bowring. There are French and English translations of a number of the more important Chinese works. See also Schott's *Chinesische Sprachlehre*, Davis's *Chinese Miscellanies*, and Wylie's *Notes on Chinese Literature*, Gabelert's *Ch Grammatik*, Marshman's *Elements of Chinese Grammar*, Legge's *Chinese Classics*, and Mason, *The Chinese, their Education, Philosophy, and Letters* (1881). Giles, *China and the Chinese* (1902), and the works of Edouard Chavannes (Paris).

CHINESE SEA, or China Sea: that portion of the Pacific Ocean which has China and Siam on the w., the island of Formosa on the n., the Philippines on the e., and Borneo on the s., and which forms the great gulfs of Tonquin and Siam.

CHINESE WHITE: the white oxide of zinc; recently introduced into the arts, under this name, as a pigment in place of the preparations of white-lead. It changes very little either by atmospheric action, or by mixture with other pigments; but it has not the body of white lead.

CHINGLEPUT (officially spelt Chengalpat): district in India named from its chief town. It stretches in n. lat. 12° 14′ to 14°, and in e. long. 79° 35′ to 80° 25′; 2,842 sq. m. With about 120 m. of coast, it has not a single harbor or anything like shelter from the surf. Nor is its internal navigation of any value. The only considerable river, the Palar, is in most parts destitute of water during the dry season. Excepting in Oct., Nov., and Dec., comparatively little rain falls. From that fact and perhaps also from an inferiority of soil, cultivation is said to be so much circumscribed, as to embrace only about 96,000 acres, or 1-20th part of the entire area. Pop. 1,138,000.

CHINGLEPUT, *chĭng-glė-pŭt′*, or Chengalpat: fort, with a town adjacent; lat. 12° 41′ n., and long. 80° 2′ e.; 36 m. s.w. of Madras. It is accessible to an enemy only from the s., having a tank or artificial lake on the e. and part of the n., and rice-fields, irrigated from the same, on the remainder of the n. and on the w. In the dry season, the tank is nearly exhausted, the weeds and slime in its bed causing malaria. Notwithstanding this, however, the place is considered healthful. Pop.about 8,000.

CHIN-INDIA, or Further India: see Siam: Burmah: Cochin China.

CHINK, n. *chĭngk* [AS. *cinan*, to gape; *cínu*, a chink; Dut. *keen*, a cleft]: a small rent, cleft, or opening lengthwise; a crack or gap, as in a wall: V. to crack. Chink′ing, imp. Chinked, pp. *chĭngkt*. Chinky, a. *chĭngk′ĭ*, full of chinks or long narrow gaps.

CHINK, v. *chĭngk* [an imitative word, of which *jingle* may be regarded as a frequentative; Dut. *klincken*, to clink

or sound sharp]: to make a small sharp sound with a piece of money or metal: N. a small sharp sound as by rattling money; a jingling sound; *familiarly,* money.

CHIN-KEANG-FOO, *ching-ke-âng′fô* ('River-Guard City'): Chinese city and port on the Yang-tze-kiang, at the junction of the grand canal with that river, and about 150 m. from its mouth; opened to European commerce by the treaty of Tien-tsin (1858). A British settlement was begun 1864; but trade is very slowly developing, and there is reason to doubt if Chin-keang-foo will ever become a place of importance. The anchorage is bad, the port is not a natural outlet for any staple of exportation produced in the neighboring country, and it possesses no advantage as regards the introduction of foreign goods. Formerly, however, as the southern key of the grand canal, it was both an important stronghold and a centre of traffic. The injury which the grand canal has sustained has for the present practically extinguished the inland trade. Chin-keang-foo was opened to foreign commerce in 1861. Pop. 145,000.

CHINNOR: musical instrument of the ancient Hebrews with 32 strings.

CHINON, *shē-nōng:* town of France, dept. of Indre-et Loire, beautifully situated on the Vienne, 25 m. s.w. of Tours. It has the remains of a huge old castle, formerly the occasional residence of the Plantagenet kings of England, also of some of the French sovereigns, and noted as the place where Joan of Arc commenced her historical career, and as the birthplace of Rabelais. Chinon has manufactures of druggets, serges, earthenware, etc. Pop. 6,000.

CHINOOKS, *che-nôks′:* nearly extinct tribe of American Indians, former inhabitants of the country around the Columbia river, Oregon.

CHIN′QUAPIN. See CHESTNUT and OAK.

CHINSE, v. *chĭns:* to push oakum or tow into the chinks or seams between a ship's planking. CHIN′SING, imp. CHINSED, pp. *chĭnst.*

CHINSURA, *chĭn-sô′râ:* town on the right bank of the Hooghly, about 20 m. above Calcutta. It contains the Hooghly College, and is considered one of the most healthful places in Bengal. It was originally a Dutch settlement, but was ceded 1824 to the British, with some other places on the mainland, in exchange for the English possessions in the island of Sumatra. Pop., with Hooghly, abt. 35,000.

CHINTZ, or CHINTS, n. *chĭnts* [Hind. *chhit,* spotted cotton cloth]: highly glazed printed calico, or cotton cloth, with a pattern in more than two colors on a white or light colored ground. It is used chiefly for bed-hangings, for covering furniture, and other purposes where gay colors are desired, and where there is much exposure to dust, which does not adhere to its highly calendered surface.

CHI'O. See Scio.

CHIOCOCCA, *kī-ō-kŏk'ka:* genus of tropical and subtropical plants, of the nat. ord. *Cinchonaceæ*, of which two species in particular, *C. anguifuga* and *C. Densifolia*, the former a trailing herb, the latter a bushy shrub, have high reputation in their native country, Brazil, as cures for snake-bites. An infusion of the bark of the root is certainly one of the most violent emetic and drastic medicines known, its action being accompanied with spasmodic agitations of the whole frame and other symptoms, such as to preclude its use except in the most extreme cases. Yet it had at one time high repute in Europe, and was administered in small doses as a diuretic and purgative.

CHIOGGIA, *kē-ŏj'â*, or Chiozza, *kē-ŏts'â:* important commercial town and seaport of n. Italy, province of Venice; on an island of the same name in the Adriatic, connected with the mainland by a stone bridge of 43 arches. The inhabitants are engaged chiefly in the coasting-trade, in lace-making, and in ship-building. Pop. 30,500.

CHION'IS, and CHION'IDÆ. See Sheath-Bill.

CHIOPPINE, n. *chŏp-pēn'* [Sp. *chapin*]: in *OE.*, the high shoe formerly worn by women. See Chopine.

CHIP, n. *chĭp* [softened from *chop:* Sp. *chapa*, a thin metal plate: Swiss, *kide*, a twig: W. *ccdys*, fagots of small wood: Ger. *kippcn*, to clip or pare]: a small piece of a body cut or broken off; a fragment; material used in making bonnets and hats: V. to cut into small pieces; to cut or break off small pieces; to hew. Chip'ping, imp.: N. a piece cut or broken off. Chipped, pp. *chĭpt*. Chip hats: see Brazilian Grass. Chip of the old block, one having the character, dispositions, and manners of a predecessor or parent. Brother chip, any one of the same trade, business, or profession—but properly a brother carpenter. *Note.*—Chip is connected with *chop* and *chap*.

CHIPMAN, *chĭp'man*, Nathaniel, ll.d.: 1752, Nov. 15—1843, Feb. 15: b. Salisbury, Conn.: jurist. He graduated at Yale 1777, served as a lieut. at Valley Forge, Monmouth, and White Plains; resigned 1778, Oct. 10, and after rapid legal studies at Litchfield, Conn., was admitted to the bar 1779, Mar. Settling at Tinmouth, Vt., whither his father had removed 1775, he became a member of the legislature 1784-5, judge of the state supreme court 1786, chief justice 1789, and again 1796 and 1813-15. He was a commissioner to adjust difficulties with N. Y. 1789, and to negotiate for the admission of Vt. into the Union 1791, as well as a member of the convention which determined on that step. United States district judge for Vt. 1791-93; working member of a committee to revise the Vt. statutes 1796-7, and again 1826; United States senator 1797-1803; prof. of law at Middlebury College from 1816, succeeding his brother, Daniel Chipman (1785-1850), who wrote his life (Boston 1846). He published *Reports and Dissertations*, and *Sketches of the Principles of Govern-*

*ment* (1793; enlarged 1833). He died at Tinmouth, Vermont.

CHIPMUNK, or Chipping Squirrel. See Squirrel; Ground Squirrél.

CHIPPENHAM, *chĭp'nŭm:* municipal borough in Wiltshire, England, on the left bank of the upper part of the Bristol Avon, on the Great Western railway, 22 m. e. of Bristol. It consists chiefly of a well-built street about half a mile long. A bridge of 21 arches crosses the Avon here. Chippenham is famed for its markets of cheese and corn, its cheese-market being one of the largest in Britain. There are silk and woolen manufactures; and some mineral springs in the vicinity. Chippenham was the seat of the Saxon kings of Wessex. About 880, the Danes took it from Alfred, and kept it two years. Pop. 5,000.

CHIPPEWA, *chĭp'pē-wâ*, Battle of: 1814, July 5; in Welland co., Ontario, Canada, at the junction of Chippewa creek with the Niagara river 2 m. above the falls. The Americans had crossed July 3 and taken Fort Erie. Gen. Scott with 1,900 men advanced next day, found 2,100 British under Gen. Riall posted behind Chippewa bridge, and took a good position. After skirmishing from daylight July 5 till 4 p.m., Gen. R. B. Porter was sent forward with the volunteers, routed a small party, and was driven back in disorder. Scott then charged and drove the enemy to their intrenchments beyond the creek, before Gen. Ripley could come to his aid. Gen. Brown directed the U. S. army, but was not engaged. The American loss was 68 killed and 267 wounded, the British 138 killed and 365 wounded.

CHIPPEWA FALLS: town and cap. of Chippewa co., Wis.; on the Chippewa river and the Wisconsin Central and other railroads; 12 m. n.e. of Eau Claire. It contains the county Insane Asylum and the State Home for the Feeble-Minded, and important manufactures, electric lights, street railways, etc., and an assessed property valuation of $2,000,000. Pop. (1910) 8,893.

CHIPPING-BIRD, *chĭp'ping* (*Spizella socialis*): bird otherwise called Chipping Sparrow. It is five or six in. long, whitish underneath, back and sides ash color, variegated with white and black, and crown chestnut. It has six or seven notes, which it repeats rapidly.

CHIQUICHIQUI PALM, *che-kē-chē'kē* (*Leopoldinia Piassaba*): the Piassaba of the n. of Brazil, and one of the palms which yield the Piassaba (q.v.) fibre, now much used for making brushes. The Piassaba fibre exported from Pará is obtained from this tree. It grows in swampy or occasionally flooded lands on the banks of the Rio Negro and other rivers of Venezuela and the n. of Brazil; and has a crown of very large, regularly pinnate leaves, with smooth, slender stalks. The leaves, like those of many other palms, are much used for thatching. The commercial fibre is obtained from a remarkable covering of the stem; formed of

marginal processes of the leaf-stalks, elongated into ribbon-like strips, and interlaced, finally splitting into fine fibres, hanging down five or six ft. and entirely concealing the stem, so as to give the tree a very extraordinary appearance. It twists readily into cordage, and the fibre has been long used for cables of canoes on the Amazon and other rivers. Before the independence of Brazil, the Portuguese government had a factory on the Rio Negro, for the manufacture of cables of this fibre.

CHIQUIMULA, *chē-kē-mō'lâ:* eastern dept. of Guatemala bounded n. by the Bay of Honduras and the Caribbean Sea, and e. and s. by Honduras; area, 4,000 sq. m.; pop., 80,000. It contains the only Guatemalan ports, Izabal, on the Gulf of Dulce, which has a shallow harbor, and San Tomas de Castillo at the mouth of the river Motagua. Here a Belgian colony was founded 1844, but did not succeed. The cap., Chiquimula de la Sierra, 75 m. n.e. of Guatemala, has a good trade. Pop. 6,000.

CHIQUIMULA, *che-kē-mô'lâ,* Isthmus of: in Central America, s.e. of the peninsula of Yucatan; long. 89° w. Its breadth from the Caribbean Sea to the Pacific is about 150 m.—the greatest elevation not exceeding 2,000 feet.

CHIQUITOS, *chē-kē'tos:* Indian tribe of central S. America, w. of the Paraguay river in the prov. of Chiquitos, Bolivia. They were numerous and powerful, of superior character and some attainments. The Portuguese Alexis Garcia visited them 1525, and, attempting to cross the continent from the e. coast, was killed at the Andes. Juan de Ayolas, 1537, and others who sought to subdue them, fared no better. The Jesuits founded a mission among them 1691, and followed with at least eight others; under their teaching the Chiquitos so improved that their churches were equal to any in the new world, and their towns, products, and manufactures superior to those of the whites. They were employed as teachers of neighboring tribes, till their language displaced all the 12 others in the province. As in N. America, the missions attained high prosperity, and the suppression of them was disastrous in its results. The Jesuits were expelled 1767, and the Chiquitos, deprived of the leadership to which they had long trusted and submitted, relapsed into barbarism; the churches fell into decay, the villages were depopulated. By 1801 their numbers were reduced two-thirds, and but 25,000 remain.

CHIRAGRA, n. *kī-rā'gră* [L. *chirāgra*—from Gr. *cheir,* the hand; *agra,* a catching]: gout in the hand. Chiragrical, a. *kĭr-ā'grĭ-kăl,* having gout in the hand, or subject to it.

CHIRETTA, n. *kĭr-et'tă,* also Chirata, or Chireeta [a corruption of the systematic name *chirayta*—from Skr. *chirā etā*], (*Agathotes Chirayta,* known also as *Ophelia Chirata*): officinal plant belonging to the nat. ord. *Gentianeæ,* and possessing properties similar to those of the common

gentian, the centaury, and other plants of that order. It is a native of the mountains of the n. of India. The whole plant is intensely bitter, and has been long used in its native country as a tonic and stomachic. It is also in high estimation with European practitioners in India as a febrifuge and is often used by them as a substitute for cinchona. The medicinal virtues are both in the herb and in the root. The whole plant is pulled up at the time when the flowers begin to fade, and is dried for use.

CHIRIQUI, *chē-rē-kē′:* river in Central America, near the boundary of Panama and Costa Rica, flowing toward the n. and emptying into the lagoon of the same name—lat. and long. of its mouth being about 9° n., and 82° 30′ east.

CHIRIQUI: province on the isthmus and in the state of Panama, Colombia; area 500 sq. m.; pop. 18,000.

CHIRK, v. *cherk: OE.*, for CHIRP.

CHIROGRAPH, n. *kī′ro-grăf* [Gr. *cheir*, a hand; and *grapho*, I write]: in *law*, an indenture made in evidence of title to land, etc. When these were less prolix than now, the part and counterpart were written on the same sheet of parchment, separated by a longitudinal vacant space. In that space was then written a word, or even the whole alphabet, and then a wavy line was cut through it from top to bottom, so as to put part of the word or alphabet, on the copy of the deed handed to the one party and the rest on that given to the other. The word *chirographum* being most commonly introduced to be cut across, the term *chirographa*, handwritings, was applied to them. It answered to what we now call a *charter-party* (q.v.); a fine indented on the same principle was called a chirograph also.

CHIROGRAPHY, n. *kī-rŏg′ră-fĭ* [Gr. *cheir*, the hand; *graphē*, a writing]: the art of writing. CHI′ROGRAPH′IC, a. *-rō-grăf′ĭk*, pertaining to. CHIROG′RAPHER, n. *-rŏg′ră-fėr*, or CHIROG′RAPHIST, n. *-fĭst*, one who.

CHIROLOGY, n. *kī-rŏl′ŏ-jĭ* [Gr. *cheir*, the hand; *logos*, discourse]: art of talking with the hands. CHIROL′OGIST, n. *-jĭst*, one who.

CHIROMANCY, n. *kī′rō-măn′sĭ* [Gr. *cheir*, the hand; *manteï′a*, divination]: art of foretelling events or the dispositions of persons by inspecting the lines of the hands. CHI′ROMAN′TIC, a. *-tĭk*, pertaining to. CHI′ROMAN′CER, n. *-ser*, one who; also CHI′ROMAN′TIST, n. *-tĭst*.—Chiromancy or *Palmistry*, as recently practiced for a curious diversion, is a form of divination that professes to read the future of an individual by tracing his disposition and natural tendencies as shown in the lineaments of the hand. In the middle ages, chiromancy occupied the attention of Cardan, Paracelsus, and other eminent men, who elaborated it into a system. It is now, however, almost the exclusive property of the gypsies.

The left hand is examined in its lines, projections, joints, nails, and contour of thumb and fingers. Most important is

the *line of life*, curving from the upper joint of the forefinger round the ball of the thumb to the wrist joint; this, when regular and deeply colored, indicates a long and happy life, or various qualities and fates according to its varied markings, furrowings and crossings. The *line of health* runs across the middle of the hand, that *of fortune* from the forefinger to the little finger: much depends on having these distinct and unbroken. Not every one is favored with the *line of the joint* or *of the triangle*, which, when clear, promises success after much difficulty. Elevations or projections at the base of the thumb, fore, middle, ring, and little fingers are known as the *mountains* respectively *of Venus, Jupiter, Saturn, the Sun*, and *Mercury:* they denote in turn a happy temper, a virtuous disposition, simplicity and love of labor, eloquence and vivacity, and firmness or modesty according to sex. *Mars* also has a *mountain* of courage and the *moon* one of melancholy. From the latter, on the wrist joint, *the milky way* runs toward the little finger, and where strongly marked portends success in studies, arts, or foreign travel and adventure. White spots under the nails betoken fulfilment of desires, and lines near the little finger domestic bliss. Aristotle considered chiromancy a science.

CHIRON, or CHEIRON, *kī′ron:* most famous of the Centaurs (q.v.). In the ancient works of art, Chiron of course appears as half-man, half-animal; but his features, instead of expressing mere savage and sensual strength, as those of the Centaurs generally do, are marked by a mild wisdom, in harmony with the character and deep knowledge attributed to him by the Greek mythologists. He was the wisest and justest of the Centaurs, skilled in medicine and music.

CHIRONECTES. See CHEIRONECTES.

CHIRONOMY, n. *kī-ron′o-mĭ* [Gr. *cheironomia*—from *cheir*, the hand; *nomos*, a rule, regulation]: gesticulation by the use of the hands; directions given by movements of the hand, especially to a chorus. In the early church of the West such a system was a vogue; and some maintain that the sign of sounds, as then written, were merely pictorial representations of the movement of the hand.

CHIROPLAST, n. *kī′rō-plăst* [Gr. *cheir*, the hand; *plassein*, to shape]: in *music*, an instrument to teach fingering.

CHIROPODIST, n. *kī-rŏp′ō-dĭst* [Gr. *cheir*, the hand; *poda*, the foot: comp. Gr. *keiro*, I clip or pare]: a corn or wart doctor.

CHIRRA POONJEE, *chēr-râ pôn′jē:* town in the n.e. of India; lat. 25° 14′ n., long. 91° 45′ e. It stands on the Cossya Hills, 4,200 ft. above the sea—and has a temperature during the hot months 20° F. lower than that of the plains of Bengal. Notwithstanding this, however, the place has proved unsuccessful as a sanatorium. The vicinity abounds

in mines of coal and iron, which may be profitably worked.

CHIRP, n. *chėrp* [an imitative word: Dut. *kirren*, to coo; Sp. *chirriar*, to chirp; Norw. *charer*, to chatter]: a particular sound uttered by birds, or certain insects: V. to make a noise, as the cry of small birds; to be cheerful; to make cheerful. CHIRP'ING, imp.: N. the gentle noise of birds. CHIRPED, pp. *chėrpt*. CHIRP'ER, n. one who chirps; one who is cheerful. CHIRP'INGLY, ad. *-lĭ*. CHIRRUP, or CHERUP, n. *chėr'ŭp*, chirp; the sounds of love-making.

CHIRU, *kēr'ô* (*Antilope Hodgsoni*): species of antelope inhabiting the pine forests and elevated open plains of Tibet, in regions bordering on perpetual snow. It is much larger than the chamois, being about five ft. in length, and the height at the shoulder about three ft. The chiru lives in great herds, and seems to exceed almost all the other gregarious ruminants in watchfulness against the approach of danger. Sentinels are constantly posted, to prevent surprise.

CHIRURGEON, n. *kī-rėr'jŭn* [F. *chirurgien*—from Gr. *cheirour'gos*, a surgeon—from *cheir*, the hand; *ergon*, work]: in *OE.*, the spelling of surgeon—and so of other derived words.

CHISEL, n. *chĭz'l* [F. *ciseler*, to emboss, to engrave: Port. *sizel*, a chisel; OF. *cisel;* It. *cesello*, a chisel; mid. L. *cisellus*, forceps; *sciselum*, a chisel]: a cutting instrument or tool of iron or steel, used by masons, joiners, and sculptors. V. to cut; to pare; to carve or engrave with a chisel; *slang*, to swindle in a small way. CHIS'ELLING, imp. CHIS'ELLED, pp. *-ĕld*. CHIS'ELLER, n. one who. COLD CHISEL, a chisel for cutting metal.

CHISEL: an edged tool for cutting wood, iron, or stone. It is operated by striking its upper end with a hammer or mallet, or by pressure. It is one of the most ancient of tools. Chisels of sharp flint have been always used by savages to cut wood, and in very early times bronze ones were made which would cut the hardest stone. The ancient Egyptians carved most of their granite monuments with copper or bronze chisels, which are said to have cut as well as the best steel chisels of the present day. Chisels are now made in many different forms and for many kinds of work. Those used by sculptors, masons, and other workers in stone are merely short pieces of steel with sharp edges. The tool is held in the left hand and is made to cut by striking it on the end with a broad hammer called a mallet, made usually of wood. Blacksmiths, and other iron-workers use chisels much like those of stone cutters, for cutting off bars of iron and like work. Carpenters and joiners' chisels are much finer tools, and usually have handles. They are made out of bar iron by forging, or hammering it while hot, and the edge of tool steel is put in in the same way as the edge of an axe. Such chisels are made of many sizes, from an eighth of an inch up to several inches in width, and are used for different

kinds of wood-cutting and carving. Dovetails, mortises, and other such work are usually cut with chisels. A kind of chisel with a rounded blade, used for cutting grooves and round places in wood, is called a gouge.

CHISHOLM, *chĭz'om*, CAROLINE (JONES): 1810–77, Mar. 25; b. Wotton, Northamptonshire: English philanthropist. She married, 1830, Capt. Chisholm of the Indian army, and went with him to Madras, where she founded a school for the orphans of British soldiers, and to Australia 1838. Pitying the poor girls who came to Sydney in emigrant ships, she started an asylum and training school, and, extending her benevolent enterprise, found employment, 1841–45, for 11,000 men and women, besides lending them small sums which were returned in almost every case. Returning to England 1846, she established the Family Colonization Soc., and in many ways helped emigrants. She was again in Australia 1854–66. She published *Information of the People of New South Wales* (abt. 1840), and *True Stories of Arctic Adventure and Discovery* (1874).

CHISLEU, n. *kĭs'lô* [Heb. *chisleu*]: the ninth month of the Jewish year, beginning with the new moon of our December.

CHIT, n. *chĭt* [Swiss, *kide*, a twig: prov. Eng. *chits*, the first sprouts of anything: It. *citto*, a little dirty boy]: a shoot or sprout; a lively child; a baby. CHITTY, a. *chĭt'tĭ*, childish; like a babe. CHIT-CHAT, n. *-chăt*, prattle; familiar talk.

CHITINE, n. *kī'tĭn* [Gr. *chiton*, a coat; a tunic]: the hard substance of the covering (the external skeleton) of all insects and crustacæ: nearly allied to horn. In insects it constitutes not merely the external skeleton, the scales, etc., but also forms their tracheæ, and thus penetrates into the most remote portions of their organs; indeed one of the layers of their intestinal canal consists of chitine. It is left when the above structures are exhausted successively with alcohol, ether, water, acetic acid, and alkalies. It is colorless and amporhous, and is usually classed as a proteid; the chemical formula is $C_{15}H_{26}N_2O_{10}$. It is dissolved by concentrated mineral acids without the production of color. It is not dissolved by solution of potash, even when boiling; neither does it give the characteristic reactions with Milton's or Schultze's tests.

It seems to be identical with the substance termed by Lassaigne *Entomaderm*. CHI'TINOUS, a. *-ŭs*, consisting of or having the nature of chitine. CHI'TON, n. *-tŏn*, a mollusk with a many-jointed shell, covering its back—also found fossil. CHI'TONEL'LUS, n .*-ĕllŭs* [dim. of CHITON]: a sub-generic form of chiton, distinguished by the form of the plates.

CHITON, *kī'tŏn*, the undergarment of the ancient Greeks In the earliest times it was worn by the men only; in later times there were two forms, and the chiton was worn by both sexes. The Dorian chiton was sleeveless, reaching about to the knees, and usually left more or less open on

the right side. The Ionian was a long tunic reaching to the feet, closed on the sides, sometimes sleeveless, but often with short or long sleeves. Both forms were usually worn belted in at the waist.

CHITON, *kī'ton* [see under CHITINE]: Linnæan genus of mollusks. Linnæus, regarding merely the shell, placed them in the class of multivalves, a class entirely artificial. They are now regarded as constituting a family (*Chitonidæ*) of gasteropodus mollusks, of the order *Cyclobranchiata* of Cuvier, and as occupying a place in systematic arrangement close to limpets. The shell is composed of eight narrow, transverse, calcareous pieces, overlapping each other in a row along the back, and strongly attached to the mantle, which is remarkably fleshy and fibrous. They have the power of rolling themselves up into a ball. The organ of locomotion is an oval foot, more or less wide, according to the species, and extending the whole length of the animal. More than 200 species are known; they occur in all climates, most abundantly on rocks at low-water, but some of them at great depths.

CHITTAGONG, *chĭt-ta-gŏng'* (properly CHATTAGRÁM): maritime dist. in lower Bengal, taking its name from its cap. It is bounded on the s. by Arracan, on the w. by the Bay of Bengal, and extends lat. 20° 45′ to 23° 25′ n., and from long. 91° 32′ to 93° e.; 2,567 sq. m. Pop. about 1,150,000.

CHITTAGONG is the name also of a *division;* 12,118 sq. m. In its forests large numbers of elephants are annually caught. Pop. of div. 4,190,081.

CHITTAGONG, *chĭt-ta-gŏng'*, or ISLAMABAD, *ēs-lâ-mâ-bâd'* (second name having been conferred by Aurungzebe, who captured it toward the close of the 17th c.): city of India; on the Kurrumfuli, about 7 m. from its mouth; lat. 22° 20′ n., and long. 91° 54′ e. It came into the possession of the British, with Bengal proper, 1760–65. But having originally formed part of Arracan, it was claimed after a lapse of 60 years, by the Burmese emperor as a dependency of that territory—a claim which formed one of the grounds of the war of 1824. Through the results of that contest, Chittagong, diminished in importance, but some European merchants began to settle there 1864, and its prosperity is returning. Its ship-building business is now largely transferred to Moulmein, in Tenasserim. Pop. 24,100.

CHITTAGONG WOOD: wood of *Chickrassia tabularis*, tree of the nat. ord. *Cedrelaceæ*, native of the mountainous countries e. of Bengal. In parts of India, it is called *Cedar* or *Bastard Cedar*, names given also to other kinds of wood, Chittagong Wood is much valued in India, and is used for all purposes for which mahogany is used in Britain. It makes beautiful and light furniture, but is apt to warp in very dry weather. Beautifully veined and mottled pieces, occasionally met with, are highly valued.

CHITTELDROOG, *chĭt-tēl-drôg'*, or CHITRADURG, *chĭt-*

*rô-dôrg'* (*Sitala durga*, the spotted castle): town of British India, province of Mysore, 280 m. w.n.w. of Madras, 125 m. n. of Seringapatam; lat. 14° 14′ n., long. 76° 27′ e. It is in a fertile plain, but notable only for a strong fortress built on a high rock, which was besieged 1776 by Hyder Ali and defended by a fanatical tribe, the Beders, who obtained 200 human heads in their sallies, and sacrificed them to their goddess. The place was betrayed 1779. It is now occupied by a British garrison. Near C. are curious caverns, supposed to have sheltered devotees of Siva.

CHITTENDEN, *chĭt'ten'dĕn*, HIRAM MARTIN: American military engineer: b. New York, 1858, Oct. 25. He has supervised engineering government works in the Yellowstone National Park and elsewhere, and has published *The Yellowstone National Park: Historical and Descriptive* (1893); *Reservoirs in the Arid Regions* (1897); *Reservoir System of the Great Lakes* (1898); *The American Fur Trade of the Far West* (1901); etc.

CHITTENDEN, RUSSEL HENRY: American educator: b. New Haven, Conn., 1856, Feb. 18. He was graduated at Yale in 1875, and took a course at Heidelberg. He became professor of physiological chemistry at Yale in 1882, and since 1896 has been director of the Sheffield Scientific School. He has written *Digestive Proteolysis; Studies in Physiological Chemistry*, and similar works.

CHITTENDEN, THOMAS: 1730, Jan. 6—1797, Aug. 24; b. East Guilford, Conn.; first gov. of Vermont. He removed, 1750, to Salisbury, Ct., which he long represented in the legislature; and, 1774, May, to Vt., settling at Williston, on Onion river. He was a member of the conventions of 1777 which declared Vt. a state and framed its constitution; pres. of the council of safety, and gov. from 1778 to his death, except one year. His earlier administration met and surmounted peculiar difficulties, owing to the claims of N. Y., the temptations held out by England, and the position of Vt. outside of the union of the states. He died at Williston. A memoir of him by D. Chipman appeared 1849.

CHITTERLINGS, n. plu. *chĭt'tẽr-lĭngs* [prov. Eng. *chitter*, to twitter, then to shiver]: in *OE.*, a sort of frilling on the breast of a shirt; the small entrails of swine, from their wrinkled appearance.

CHITTOR, *chĭt-tôr':* fortified town in India, dist. of Arcot, about 80 m. w. of Madras; lat. 13° 12′ n., and long. 79° 9′ e. It stands on the s. or right bank of the Puni, an affluent of the Palar, and is about 1,100 ft. above the sea. Its river varies, according to the season; from a small rivulet to an expanse of 400 yards in width. When the stream is at its lowest, the very tanks, as well as the deserted channel, become little better than slime—the result being fever, ague, dysentery, and other diseases. The thermometer has occasionally reached 140° in the sun; but the annual range in the shade runs from 56° to 100°.

CHITTOR: fortified town in Odeypoor, or Mewar,

India; about 270 m. s. w. of Agra; lat. 24° 52′ n., and long. 74° 41′ e. The fortress occupies the summit of an isolated rock of nearly 6,000 yards in length, and 1,200 in breadth, which is scarped all round to a depth of 80 or 100 ft., about a fourth part of its entire altitude. Within the inclosure are several antique structures—such as temples, tanks, a palace, commemorative pillars, and an inner citadel.

CHITTY, *chĭt′ĭ*, Joseph: 1776–1841; writer on law. Educated first for medicine, he was called to the bar by the Middle Temple in London 1816, won note as a pleader, and fame and usefulness by legal text-books of the highest rank. Among his many publications perhaps the most important are *Pleadings and Parties to Actions* (2 vols., 1808); *Law of Nations* (1812); *On the Criminal Law* (4 vols., 1816); *Laws of Commerce and Manufactures* (4 vols., 1825); *Medical Jurisprudence* (1834); *General Practice of the Law* (4 vols., 1836–40); and his edition of Blackstone. 'Chitty on Pleading' was long almost as famous as Blackstone himself.

CHITTY, Thomas: 1802–1878, Feb. 13; son of Joseph Chitty. He studied law with his father, and became a special pleader when only 17 years old. Though never called to the bar he attained great eminence in his line, and was the editor of *Chitty's Practice* and of Burns's *Justice of the Peace*, beside being the author of many works on legal topics.

CHIUSA, La, *lâ kē-ô′sâ* (so called from the ground having been originally *inclosed* as pasture-land for horses): town of Sicily, prov. of Palermo, 30 m. s.s.w. of the city of Palermo, on the slope of some hills. The town was built 1320. Agates are found in the vicinity. Pop. 7,000—A smaller town of the same name is in n. Italy.

CHIUSI, *kē-ô′sē:* town of central Italy, prov. of Siena, 37 m. s.e. of Siena; on an eminence in the Val di Chiana, not far from the lake of the same name. In ancient times, under the name of *Clausium*, it was one of the 12 republics of Etruria, and the residence of Porsena (q.v.). When Italy was overrun by the barbarians, Chiusi fell into decay, the whole valley was depopulated, and became the pestilential pool described by Dante. Since the improvement of the course of the Chiana (q.v.) Chiusi, with the whole district, has begun to flourish again. But it is in connection with the discovery of Etruscan antiquities that Chiusi is chiefly noted. Within the last quarter of a century, immense quantities of these remains have been found in the neighborhood in the grottos that served the ancient Etruscans as tombs. There are three museums in Chiusi filled with them, and a great number are in the public gallery at Florence. They consist chiefly of sun-dried earthenware vases, black, and partially covered with mythological figures. Excavations still continue, but discoveries have become rarer of late years.

## CHIVALRY.

CHIVALRY, n. *shĭv′ăl-rĭ*, or *chĭv′-* [F. *chevalerie*—from *cheval*, a horse—from mid. L. *caballārĭŭs*, a swift horseman—from L. *caball′lus*, a horse (see CAVALRY)]: the system of Knighthood; valor; the body or order of knights; the exploits or enterprises of knights. CHIV′ALRIC, a. *-rĭk*, partaking of the character of chivalry or knighthood. CHIV′ALROUS, a. *-rŭs*, warlike; bold; gallant. CHIV′ALROUSLY, ad. *-lĭ*.

CHIV′ALRY: the system of knighthood together with the privileges, duties, and manners of knights. The social arrangement to which this term is applied seems first to have assumed the character of a positive institution during the 11th c.; but so far from being an invention of that period, it had its roots in the manners of the Germanic races, among whom it ultimately arose at the earliest period at which they are historically traceable. In the description which Tacitus has given us of the manners of the Germans we find the most unequivocal indications of the existence, not only of the general spirit, but, in a partially developed form, of many of the special arrangements of chivalry. But it was in connection with feudalism that chivalry attained its full proportions, and in many respects it must be regarded as the complement of that institution: see FEUDAL SYSTEM. While feudality exhibits the political, in chivalry we see the moral and social side of the arrangements of medieval life. It was in the feudal mansions of the barons that the system was developed; and to the lay portion of the youth of the higher classes, the instruction which they there received in the usages of chivalry formed far the most important part of education. In addition to the martial accomplishments, which corresponded to those of a modern cavalry-officer, they were instructed in the political relations which subsisted between the vassal and his lord, by which the whole body of society was then bound together; and in what might almost be called a system of ethics, exhibiting strange but unmistakable traces of the stoic philosophy. The analogy between the severer virtues recommended to the special cultivation of their disciples by the followers of Zeno, and those inculcated on the novice in chivalry, and practiced by the knights of the middle ages, might be ascribed to other than historical causes, were it not that we are able to trace the connection between them with an approach to certainty. If any one wishes to convince himself on this point let him compare the last production of the intellectual life of antiquity with one of the earliest and most important of our own literature, the *Consolations of Philosophy* of Boethius with Chaucer's *Testament of Love*. The resemblance is so close that the latter work has, not without reason, been regarded as an imitation of the former; but the main features which distinguish them, and mark Chaucer's work as belonging to the modern world, are more instructive than even their similarity. The place which Philosophy, the celestial consoler, occupies in the work of Boethius, in that of Chaucer is supplied

by a personalized *Love*—a being whom we must in no-wise confound either with the heathen goddess, or, as some have done, with the divine love of the Christian religion. She is neither more nor less than the embodiment of an abstract idea which formed the central point of the whole system of chivalry; and her substitution for the Philosophy or Reason of Boethius is very characteristic of a state of society in which the affections and passions, rather than the intelligence, were the motive principles. The 'Love' of Chaucer is a complete generalization, altogether independent of individual object, and the consolation which she proffers to her votary is that of enlisting in his favor the special guardian, the 'Margarite,' who is supposed to watch over his individual fortunes. The 'Margarite' seems to correspond to the chivalrous idea of the *Lady-love*, in its purest sense, when its reference to a person was by no means indispensable, but when it signified rather 'the love of woman,' the highest object of the knight's ambition. Under the protection of this guardian spirit, the lover is represented as altogether sheltered from the caprices of fortune, and in her name he has a dose of rather frigid comfort administered to him, greatly resembling that which Boethius receives at the hands of Philosophy. Such is the general idea of the book; and it is a noble idea, embracing the very essence of society as it existed then, and presenting a much deeper view of that singular institution, chivalry, than is usually given in writers who have not been actually brought in contact with its influences. But to the two elements which we have mentioned as ingredients in the spiritual life of chivalry, the Germanic traditions on the one hand, and those of classical antiquity on the other, a third must be added, perhaps the most important of all —that of Christianity as represented by the church. The clergy were too fully aware of the importance of early impressions not to seize on the imagination of the aspirant to chivalry at the all-important moment of his inauguration. The purifications, prayers, and vigils, the sacrament, and the vows by which this solemn rite was accompanied, were made deeply solemn and impressive (see KNIGHT; BANNERET; BATH; etc.); and their influence in casting a religious character over the whole institution of chivalry, and occasionally in directing its energies specially to the propagation of Christianity, by means of the various religious orders of knighthood and the Crusades, was almost incalculable. Nor was the poet behind the priest in availing himself of the influences of chivalry, and developing them in the region of the imagination. What Chaucer has exhibited in the work above referred to may be regarded rather as the philosophical than the poetical side of the institution. But to poets of a lighter and more imaginative cast of mind, chivalry has furnished, from the days of the troubadours down to the present poet-laureate, no insignificant portion of their subject-matter. King Arthur and his knights of

the round table, the traditions regarding whom had been taken from a period altogether mythical, and long anterior to the existence of chivalry as an institution, became to the poetry of the middle ages very much what the heroes of the Trojan war were to that of the whole ancient world. Much astonishment has often been expressed at the contrast between the lofty and ideal purity of the code of morals inculcated by chivalry, and the grossness of the lives of the men who were trained under its influences. The case is one which shows at once the moral inefficiency of mere sentiment, and yet the tendency of elevated sentiment to induce the inculcation of moral principles, which may ultimately influence action. Under chivalry the practice gradually, though slowly, conformed itself to the principles; and the elevated tone of these principles seems to have been the summons of awakening from long social degradation, and to have heralded the moral superiority of the modern over the ancient world.

CHIV'ALRY, Court of: military court, established by Edward III., of which the earl marshal and the lord high constable were joint judges. When held before the earl marshal alone it was merely a court of honor, but when both were present it was also a criminal court. Having encroached on the common law, its jurisdiction was defined by 13 Rich. II. stat. i. Under this act the court claimed power to give relief to such of the nobility and gentry as think themselves aggrieved in matters of honor, and to keep up the distinctions of degrees and quality. In criminal cases a jury was sworn; but in general the proceedings of the court were summary matters, being brought under its cognizance by complaint or petition. An attempt was made to revive the functions of the court in Queen Anne's time; but, except as represented by the earl marshal's court (see College of Arms), it has now gone into abeyance.

CHIVASSO, *kė-vâs'sō:* small city of Piedmont, n. Italy, in a fertile plain on the left bank of the Po, about 15 m. n.e. of Turin. It was formerly a place of considerable military importance, but its fortifications were destroyed 1804 by the French. The lampreys of Chivasso are celebrated throughout Piedmont. It has manufactures of bricks, earthenware, soap, etc., and a trade in the agricultural produce of the district. Pop. 4,800.

CHIVES, or Cives, n. plu. *chīvz* [F. *cive,* small onions without bulbs—from L. *cœpa,* an onion: F. *cheveler,* to put forth a small root]: small onions growing in tufts. Chive (*Allium schœno' prasum*), is a plant of the same genus with the leek and onion (see Allium), a perennial, ½ ft.-1 ft. high, with very small flat, clustered bulbs, increasing by its bulbs so as to form a sort of tuft. The leaves are tubular, cylindrical-tapering, radical, nearly as long as the almost leafless, flowering-stem which is terminated by a hemispherical, many flowered, not bulbiferous umbel of bluish red, or, more rarely, flesh-colored flowers. The stamens

are included within the perianth. This rather pretty little plant grows wild on the banks of rivers, and in marshy or occasionally flooded places in the middle latitudes of Europe and Asia. In some of the mountainous districts of Europe a variety is found, larger and stronger in all its parts, and with flowering-stems more leafy. Chives—the name is generally used in the plural—are commonly cultivated in kitchen-gardens, often as an edging for plots, and are used for flavoring soups and dishes. Their properties are very similar to those of the onion. The part used is the young leaves, which bear repeated cuttings in the season. In *bot.*, chives are slender threads or filaments in flowers.

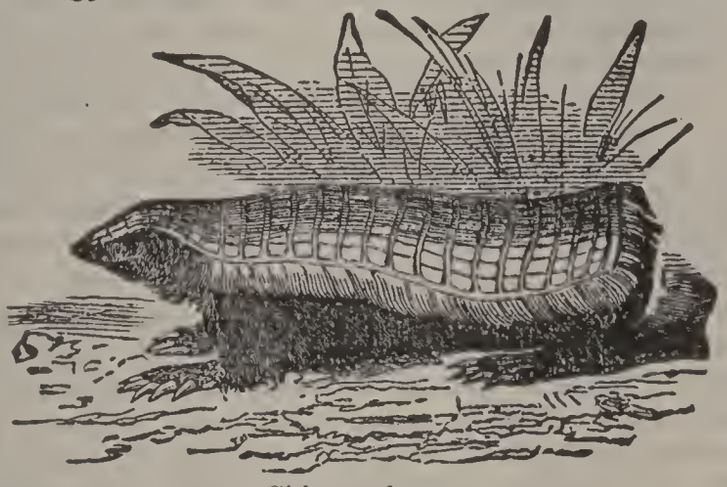
CHIVY, n. *chĭv'ĭ* [from *Chevy Chase*, the famous hunt and battle on the Cheviot Hills]: in the school game of 'prisoner's base' or 'prison bars,' the chase or chivy after one who leaves the base or bar: V. to chase eagerly. CHIVYING, imp. CHIVIED, pp. *chĭv'ĭd.*

CHIZEROTS, *shēz-ėr-ōz,* AND BURINS, *bū'rinz:* as combined, forming one of those peculiar races in France that are isolated in the midst of the population, and are despised and hated by their neighbors.—They live in the arrondissement of Bourg-en-Bresse, in the dept. of Ain; and the communes of Sermoyer, Arbigny, Boz, and Ozan belong to them. According to tradition, they are descended from the Saracens. Although industrious and prosperous, they are held in utmost contempt and detestation by their peasant neighbors, who are often indolent and destitute. They are looked upon as covetous and malicious; and scarcely would the daughter of a small farmer, or well-to-do day-laborer, become the wife of one of them, so that they marry mostly among themselves. From time immemorial, the C. and B. have been field laborers, cattle-dealers, butchers, etc. Many are very good-looking. The young women are handsome, clear-complexioned, with large black eyes. See Michel, *Histoire des Races Maudites de la France et de l'Espagne* (2 vols. Par. 1847).

CHLADNI, *chlâd'nē,* ERNST FLORENS FRIEDRICH: 1756, Nov. 30—1827, Apr.; b. Wittenberg: founder of the science of acoustics. He studied law in his native place: also in Leipsic, where, 1782, he was made doctor of laws. Chladni ultimately abandoned juridical studies, turned to natural science, and, being acquainted with music, was led to observe that the laws of sound were not so well established as those of other branches of physics. He therefore began to apply his knowledge of mathematics and physics to acoustics, and travelled for ten years (after 1802) through Germany, Holland, France, Italy, Russia, and Denmark, giving lectures on the subject, which were very successful. He died in Breslau. Chladni's writings include: *Discoveries concerning the Theory of Sound* (1787), *Acoustics* (1802), *New Contributions to Acoustics* (1817), and *Contributions to Practical Acoustics, with Remarks on the Making of Instruments* (1822).

CHLAMYDOSAURUS, *klăm-ĭ-dō-saw′rŭs* [Gr. *chlamys*, cloak; *sauros*, lizard]: Australian reptile, remarkable for a huge plaited frill covered with scales and serrated at the edge, about its neck.

CHLAMYPHORE, n. *klăm′ĭ-fōr*, or CHLAMYPHORUS, n. *klăm-ĭf-ŏ-rŭs* [Gr. *chlamus*, a coat; *phorĕō*, I carry]: very remarkable genus of mammalia of the order *Edentata*, ranked by naturalists in the same family with the armadillos, but differing in important respects from them, and from all other known quadrupeds. It is considered allied to the immense extinct glyptodons. Only one species is known, *C. truncatus*, five or six inches long, native of the interior of Chili, living underground like the mole, which it much resembles in its habits, and feeding on the same kind of food. Its fore feet are adapted for digging, although in a different manner from those of the mole. The skull is destitute of sutures; there are resemblances to the osteology of birds in the ribs and their union to the



Chlamyphorus.

sternum; the hinder part of the body is altogether unlike that of any other known animal, in its terminating quite abruptly, as if cut off almost where its thickness is greatest, or as if the back were suddenly bent down at right angles, the tail not springing from where the line of the back appears to terminate, but far below. The whole upper and hinder parts of the body are covered with a coat of mail, made up of a series of square plates; the under part and legs are covered with long silky hair. The tail is probably employed to throw back the earth in excavations.

CHLAMYS, n. *klăm′ĭs* [L. *chlamys*, a coat, an upper garment: Gr. *chlamus*]: outer garment of the Greeks and some other nations of antiquity. It was of wool, often of brilliant colors, with length twice its width. In *bot.*, a covering, applied to the floral envelope. CHLAMYD′EOUS, a. *-ĭd′ĕ-ŭs*, pertaining to.

CHLOANTHITE, n. *klō-ăn′thīt* [Gr. *chlŏă*, verdure; *anthos*, a flower]: a compound of arsenic and nickel, valuable as an ore of nickel; the nickel varieties of smaltine—so named from its arborescent, reticulated appearance

CHLOLPICKI, *chlo-pĭts'kē*, Joseph: 1772–1854, Sep. 30; b. Galicia: Polish general, and dictator of Poland during the revolution of 1830. He entered the army 1787, attracted the notice of Kosciusko during the first insurrection of the Poles, and after the storming of Praga, 1794, Nov. 9, when the hopes of the patriots were extinguished for awhile, he passed into the service of the new Cisalpine republic, and distinguished himself in various battles. In 1806 when Bonaparte called the Poles to arms, C., among others, obeyed, and fought gallantly at Eylau and Friedland. He was subsequently sent by the emperor into Spain, and in 1812 followed him to Russia, taking part in the bloody engagements at Smolensk and Moskwa. After the relics of the invading force had returned, C. left the imperial service. After the taking of Paris by the allies 1814, he led back to Poland the remains of the Polish troops who had fought under Bonaparte, and was well received by the Emperor Alexander, who made him a gen. of division. When the second insurrection of the Poles broke out, 1830, C., who foresaw the hopeless nature of the attempt, concealed himself; but the voice of the nation called him forth from his hiding-place, and 1830, Dec. 5, he was elected dictator. His moderate views, however, involved him in disputes with the extreme patriotic party, and he resigned his office 1831, Jan. 23; but he entered the Polish army as a simple soldier, and fought at Wavre and Grochow. He afterward retired to private life.

CHLORAL, n. *klō'răl*, [Gr. *chlōros*, grass-green]: *Trichloraldehyde*, $CCl_3CHO$, limpid, coloress, oily liquid obtained by saturating anhydrous alcohol with dry chlorine gas, and distilling the sulphuric acid: it has a peculiar, penetrating odor. It dissolves sulphur, phosphorus, bromine, and iodine, and is closely allied to aldehyde. Chloral Hydrate, often popularly called chloral, is chloral combined with one equivalent of water, $CCl_3CH(O.H)_2$. Chloral was discovered by Liebig 1831; it boils at 97°C. The C. hydrate was used as an anæsthetic and hypnotic first by Liebreich 1869. Though now often abused, by being taken recklessly as a narcotic, C. hydrate is a valuable addition to the pharmacopœia; it is used to procure sleep in insomnia, and in various nervous diseases, insanity, delirium tremens, neuralgia, and strychnia poisoning. It is a dangerous drug; the average dose is from 15 to 30 grains; an overdose will cause death.

CHLORANTHACEÆ, *klō-răn-thā'sē-ē:* nat. ord. of exogenous plants, closely allied to the peppers; herbaceous and half-shrubby plants.—The number of known species is small; all tropical, or natives of China and Japan. They are generally aromatic, and some are used as antispasmodics, stimulants, stomachics, and tonics. The roots of *Chloranthus officinalis* and *C. brachystachys* have been ranked among the most efficacious remedies in fevers and other diseases requiring continual and active stimulants, and instances have occurred of great benefit from their employment during the prevalence of epidemics in Java. *C. inconspicuus*

is the CHU-LAN of the Chinese; its leaves, spikes of flowers, and berries are used by them for imparting a peculiar fragrance to tea. All the teas which have what is called the *cowslip flavor* owe it to this plant.

CHLORANTHUS, a. *klō-răn'thŭs* [Gr. *chlōros*, grass-green; *anthos*, a flower]: in *bot.*, having green-colored flowers.

CHLORETHANE, see ETHANE.

CHLORIC ACID, *klō'rĭk*, $HClO_3$, known only in solution and in the form of its salts. Prepared from barium chlorate and dilute sulphuric acid. It readily decomposes into perchloric acid and other substances. Organic bodies such as paper and wood inflame violently when brought into contact with C. A. *Chlorates* salts of C.A. the most important is *potassium chlorate*, $KClO_3$, which is used medicinally in solution as a gargle. It is valuable chemically as a powerful *oxidizing agent* (q.v.). All chlorates are soluble in water and many *deliquesce* (q.v.) in air. They are generally obtained from calcium chlorate $Ca(ClO_3)_2$, which is formed by passing chlorine into hot *milk of lime* (see CALCIUM).

CHLORIC ETHER, *klō'rĭk*: mixture of one part of chloroform with eight or nine of alcohol. As used by Dr. J. C. Warren, of Boston, it was much stronger, having but two parts of alcohol to one of chloroform. The British preparation contains much less chloroform than the American. C. E. diluted with water is administered internally as a sedative and mild anodyne for insomnia and some spasmodic affections, but it is now little used an as anæsthetic. The name was formerly applied to Dutch liquid or ethylene chloride $ClCH_2.CH_2Cl$, a compound of chlorine and ethylene (olefiant gas)

CHLORINE, n. *klō'rĭn* [Gr. *chloros*, grass-green]. Chloric, a. *klō'rĭk*, of or from chlorine. Chloride, n, *klō'rĭd*, Chlorid'ic, a. *-ĭk*, pertaining to chloride. Chlorimeter: see CHLOROMETER. Chlorinate, v. *klō'rĭ-nāt*, to combine with chlorine. Chlorite, *klō'rīt* in chem. a salt of *chlorous* acid, such as sodium chlorite, $NaClO_2$. In mineralogy an abundant mineral, consisting of silica-alumina, magnesia, and ferrous oxide in somewhat varia. ble proportions. It is of green color, soft and friable, rarely occurs crystallized in hexagonal crystals, sometimes foliated like talc. It is rather soft, and is easily broken or scratched with a knife. Before the blow-pipe, it is with difficulty fused on thin edges. It is readily distinguished from talc by its yielding water in a closed tube. CHLORITE-SCHIST, or CHOLORITE-SLATE, a green, slaty rock, in which chlorite is abundant in foliated plates, usually blended with minute grains of quartz, and sometimes with felspar or mica. CHLORITIC, a *-rĭt'ĭk*, pertaining to. CHLORITIC SAND, any sand colored green by chlorite, generally applied to the greenstand of the chalk formation. Chloride of Lime, a compound of lime and chlorine, used in bleaching and as a disinfectant. Chlo-

rate, n. *-rāt*, a salt of chloric acid. Chlorous, a. *klō′rŭs*, denoting an acid which contains less oxygen than chloric acid.

CHLORINE: non-metallic element discovered by Scheele 1774, and named by him *dephlogisticated marine air*. Afterward, in 1810, Davy proved it an elementary body, and gave it the name which it now bears. In nature it is found always in a state of combination chiefly as sodium chloride, NaCl, also as the minerals *sylvite*, KCL, *carnallite*. $MgCl_2$. KCl. $6H_2ONe$. It is prepared by the electrolysis of hydrochloric acid (q.v.) or, more generally by the action of this acid on manganese dioxide, which oxidizes the hydrogen of the acid to water. C. is a greenish yellow gas, 2.5 times as heavy as air. At–34°C. it liquefies and at –102°C. crystallizes. It readily dissolves in water forming *chlorine water*. The symbol is Cl and at. wt. 35.45. C. reacts violently with many substances such as phosphorus, antimony and turpentin. A mixture of C. and hydrogen explodes on exposure to light. The most important chemical actions of C. depend on the readiness with which it combines with hydrogen. If the latter is united to oxygen this element is often displaced by the C. and the oxygen then frequently bleaches vegetable color, or oxidizes substances like bacteria or putrefactive matter, hence the use of C. for bleaching cotton, linen or paper or for disinfecting. It cannot be used to bleach silk or wool as it decomposes these substances. Organic compounds containing hydrogen frequently exchange their hydrogen for chlorine, hydrochloric acid being also formed. See SUBSTITUTION, CHEMISTRY. C. is the most important member of the *halogen elements* or *halides* (q.v.). Industrially it is chiefly used for the manufacture of *Bleaching powder* (see CALCIUM), and also in the preparation of many organic compounds such as chloral and chloroform.

On the animal system C. acts, in very minute quantity, by producing a sensation of warmth in the respiratory passages, and increasing the expectoration; in large quantity, by causing spasm of the glottis, violent cough, and a feeling of suffocation. The workmen in chemical manufactories, who grow accustomed to the C. in small quantity, are generally stout—at least, gain fat—but complain of acidity in the stomach, which they correct by taking chalk and also suffer from corrosion of their teeth, which are eaten away to stumps. The antidotes to the evil effects of the introduction of C. into the lungs are the inhalation of the vapor of water, alcohol, ether, or chloroform; but the two latter should never be resorted to except under medical supervision.

C. unites with the metals and many other substances to form an extensive class of salts known as *chlorides*.

CHLORODYNE, n. *klō′rō-dīn* [Gr. *chlōros*, grass-green; *odŭnē*, pain]: patent medicine of considerable popularity, invented by Dr. Collis Browne, but largely imitated by

various chemists. It contains opium, chloroform, prussic acid, and probably Indian hemp, and is flavored with sugar and peppermint. As it is apt to separate into two liquids on standing, it should never be taken unless it has previously been well shaken; and as, in taking a dose of C., the patient swallows an unknown quantity of three or four of the deadliest poisons with which we are acquainted it is always advisable to begin with small doses. It is unquestionably a compound which sometimes succeeds in allaying internal pain and inducing sleep, when opiates have failed; but it may be a question with a physician whether to recommend a remedy with whose composition he is unacquainted. Ten or fifteen drops is the average dose.

CHLOROFORM, *klō′rō-fawrm*, TRICHLORMETHANE, $CHCl_3$, colorless, mobile liquid with a sweet smell, prepared by distilling a mixture of alcohol, or acetone, water and bleaching powder. The reaction is complicated. It is also formed from chlorine and methane. It boils at 61°C. Sp. gr. = 1.5. C. is an excellent solvent for many materials including iodine and certain fats, and is, therefore, used instead of gasoline for the 'dry cleaning' of silks, etc. Neither the liquid nor the vapor is inflammable. It is largely employed in medicine as an anesthetic and sedative. The former property was discovered by Sir James Simpson, of Edinburgh, in 1848, though others used it for the same purpose apparently independently and almost simultaneously. It is inhaled in the form of vapor mixed with air, but great care must be used to secure its purity as it is apt to decompose on exposure to light, air, and moisture. See ANÆSTHESIA.

CHLOROFUCINE, n. *klō′rŏ-fū′sĭn* [Gr. *chlōros*, grass-green; Gr. *phukos*, L. *fucus*, the plant alkanet, the red color from the same]: a clear, yellow-green coloring matter of plants; a variety of chlorophyl.

CHLOROMETER, n. *klō-rŏm′ĕ-tĕr*, also CHLORIMETER, *-rĭm′ĕ-ter* [Gr. *chlōros*, grass-green; *metron*, a measure]: instrument for testing the strength of chloride of lime. CHLOROM′ETRY, n. *-ĕ-trĭ*, or CHLORIMETRY, process of estimating the proportion of available chlorine in bleaching powder (q.v.), which may vary from 20 to 36 per cent. The process depends upon the great power with which chlorine, in the act of being liberated from its compounds, causes the oxidation of many substances. The salt generally used is sodium arsenite, which is converted by the chlorine and water into sodium arsenate. Another method consists in adding potassium iodide to the bleaching powder, the chlorine liberates an equivalent quantity of iodine which is determined by titration with sodium thiosulphate.

CHLOROPHÆITE, n. *klō′rō-fē′īt* [Gr. *chlōros*, grass-green; *phaios*, brown, in allusion to the change of color produced by exposure]: a soft earthy mineral of an olive-green color, changing to blackish-brown. CHLO′ROPHANE,

n. *-fān* [Gr. *phaino*, I shine]: a variety of fluor-spar, exhibiting a bright green phosphorescent light when heated.

CHLOROPHYL, n. *klō'rō-fĭl* [Gr. *chlōros*, grass-green; *phullon*, a leaf]: the substance, or possibly mixture of substances, to which is due the ordinary color of green leaves and unripe fruit. It consists of carbon, hydrogen, oxygen and a little nitrogen, and is closely associated with the conversion, by the plant, or carbon dioxide and water into plant materials, such as starch, sugar, etc. Parasitic plants, such as fungi, which do not decompose carbon dioxide but obtain their nourishment from the host, do not contain C. In order that C. may act in the assimilation by the plant of carbon dioxide the plant must be exposed to sunlight. C. shows a very characteristic Absorption Spectrum (see SPECTRUM). Chemically C. is a neutral body like indigo, *i.e.* it is neither an acid nor a base. It undergoes change with great readiness and is amorphous, consequently it is somewhat doubtful if it has ever been prepared in a state of purity. The quality of C. present in leaves is small. It is extracted from them by treatment with alcohol. Other substances are dissolved simultaneously and their separation from the C. is a matter of great difficulty.

CHLO'ROPS: see CORN-FLY: WHEAT-FLY.

CHLOROSIS, *klō-rō'sĭs* [Gr. *chlōros*, green]: a form of anemia affecting young women between the ages usually of 14 and 21. The first symptom is generally shortness of breath on slight exertion; this is followed by muscular weakness, recurring headaches, dizziness, palpitation, ringing in the ears, and fainting spells. After a time pallor appears, the skin sometimes having a greenish tinge—hence the name, 'green sickness.' Menstrual disturbances are common, the function being sometimes completely suppressed. The treatment consists of rest in bed, if possible by the open window where an abundance of fresh air and sunlight may be had. The diet should be nutritious, and milk, cream, and eggs should be taken freely. The bowels must be regulated, a laxative being usually required daily, as the iron, which is given to restore the blood to its normal richness, has a constipating tendency. The iron should be taken regularly after meals for a long time. Success in the treatment of chlorosis depends largely upon the faithfulness of the patient in carrying out the prescribed regimes during a long period, until an examination of the blood shows it to be of normal quality. CHLOROSIS, in *Botany*, loss of color; etiolation; diseased state of plants, in which a sickly green or greenish-yellow color takes the place of the natural lively hue. Sometimes only a particular shoot is affected by it, but generally the whole plant; and it seems to depend upon causes which render the plant altogether unhealthy, the pallid appearance being merely symptomatic, and not only the formation of chlorophyl, but all the functions of vegetable life being languidly and imperfectly carried on.

CHMIELNICKI, Bogdan: Cossack chieftain, born about 1595; died at Chigrin, 1675, Aug. 16. He was of the Greek orthodox belief, who cherished the ambition of becoming ruler of the Ukraine. To effect this purpose, he instigated the uprising of the Little-Russians against the Poles and Jews. Utilizing the unpopularity of the Polish landlord and the Jewish middleman or leaseholder, he inflamed the Cossacks by his incendiary appeals, and in a few months three hundred thousand Jews were massacred (1648-9). Although he succeeded in slaying masses of Poles and Jews, he failed to become ruler of the Ukraine.

CHOATE, *chōt*, Joseph Hodges, American lawyer and diplomat: b. Salem, Mass., 1832, Jan. 24. He was graduated at Harvard University in 1852, and at the Harvard Law School two years later. After practising law in Boston for a year he went to New York city, where he achieved remarkable success as a lawyer, becoming in 1884 a member of the famous legal firm of Evarts, Choate and Beaman. He won great distinction as a trial lawyer, conducting many celebrated cases in State and Federal Courts and International tribunals. He successfully defended General Fitz John Porter, prosecuted the infamous Tweed Ring, appeared in the Tilden Will contest, the Chinese Exclusion cases, the Income Tax cases of 1894, and represented the Canadian government in the Bering Sea dispute. In 1856 he became active as a republican in supporting John C. Fremont. In 1894 he was president of the New York State Constitutional Convention. In 1896 he was a candidate for United States Senator but was defeated by T. C. Platt. President McKinley appointed him in 1899 to succeed John Hay as ambassador to the court of Saint James, in which capacity he served till 1905. He was elected a 'Master of the Bench of the Middle Temple' of England in 1905, April 10. This is the most distinguished honor conferrable by English lawyers on an outsider, and he is the first American so honored since the five signers of the Declaration of Independence were elected members. Mr. Choate is famous as an orator and shares with Chauncey M. Depew the title of leading humorous after-dinner speaker of this country. Consult Clemens, *Choate Story Book* (1900).

CHOATE, Rufus, ll.d.: 1799, Oct. 1—1859, July 13; b. Essex, Mass.: lawyer and orator. He graduated at Dartmouth 1819, was tutor there a year, studied law at Cambridge and under Wirt at Washington, was admitted to the bar 1823, began practice at Danvers, Mass., removed to Salem 1828 and to Boston 1834. He was in the legislature 1825, in the state senate 1827, and in congress 1830-34, where he made a notable speech on the tariff 1831. He declined re-election to the house, but filled Webster's unexpired term in the senate, 1841, Feb.—1845, Aug. Here, as at the bar, he took very high rank as an orator; among his ablest speeches were those on the McLeod case, the Oregon boundary, the tariff, the bank, the Smithsonian Institution (of which he was a regent), and against

the annexation of Texas. Returning to his true sphere at the Mass. bar, of which he was the unquestioned leader after Webster's death (1852), he won many forensic triumphs. As a pleader he had no superiors; his striking appearance, rich voice, sweet temper, strong magnetism, high culture, and rare eloquence, made a deep impression on his hearers. He loved poetry and history, and was given more to gentle humor than to sarcasm and invective. Less majestic and commanding than Webster, he was more human and sympathetic. He spent some months in Europe 1850, was a member of the whig national convention at Baltimore 1852, and of the Mass. constitutional convention 1853. Fearing danger to the Union, and anxious to conciliate the South, he supported Buchanan 1856. His health gradually failed, and with his son he sailed, 1859, for Europe, but left the vessel at Halifax, and died there. His works, with a memoir by S. G. Brown, appeared in 2 vols. at Boston, 1862. Among his greatest efforts were the eulogies on Pres. Harrison (1841) and Webster (1853), an address on the anniversary of the landing of the Pilgrims (1843), one at the dedication of the Peabody Institution at Danvers (1854), an oration before the Young Men's Democratic Club of Boston (1858), two addresses before the Cambridge Law School, and two before the Boston Mercantile Library Association.

CHOCARD, or Choquard (*Pyrrhocorax*): genus of birds of the Crow family (*Corvidæ*), differing from the choughs in having a shorter bill, though arched like theirs, but resembling choughs in their habits. The only European species is the Alpine C., also called Alpine chough and Alpine crow (*P. pyrrhocorax*); about the size of a jackdaw, of a brilliant black, with yellowish bill and red feet.

CHOCK-FULL, a. *chŏk-fûl*, or Chuck-full, a. *chŭk-* [Swab. *schoch*, a heap; *geschoppt-voll*, crammed full]: full up to the brim; full to overflowing.

CHOCKS, *chŏcks:* pieces of wood on ship-board to aid in the support of various articles. Among them are anchor-chocks, rudder-chocks, boat-chocks, stow-wood chocks, and chocks to support the ends of the beams.

CHOCO, *chō'kō:* a bay of New Granada, S. America, forming part of the Gulf of Darien. It receives the Atrato (q.v.), a stream of note in connection with inter-oceanic communication; lat. and long. about 3° 30′ n., and 77° 30′ west.

CHOCO: province forming the w. portion of the dept. of Cauca (q.v.), one of the United States of Colombia.

CHOCOLATE, n. *chŏk'ō-lāt* [F. *chocolat*—from Sp. *chocolate;* Mexican, *cacuatl* or *chocolatl*, cacao]: seeds or beans of *Theobroma cacao* (see Cocoa, not *cocoa-nut*), reduced to a fine powder or paste in a heated iron mortar, or by a machine, and mixed with pounded sugar and spices, as cinnamon, cloves, cardamom, vanilla, etc. The paste is then poured into molds of white iron, in which it is allowed

to cool and harden. Chocolate is sometimes made without spices, but is then generally called cocoa. The paste is sometimes mixed with flour, and with carrageen or with Iceland moss; and for medicinal purposes with cinchona, etc. Chocolate is used as a beverage, and for this purpose is dissolved in hot water or milk. Sometimes the yolk of an egg is added, and sometimes it is dissolved in soup or wine. It is used also in making certain liqueurs. In a pure state, it soon satisfies the appetite, and is very nourishing; when it contains spices it is also stimulating. Good chocolate is externally smooth, firm, and shining—not gritty in the fracture—easily soluble, aromatic; not viscid after having been liquefied and cooled, but oily on the surface, and leaves no sediment of foreign substances. Chocolate is adulterated in many ways, by mixing it with rice-meal, oat-meal, flour, potato-starch, roasted hazel-nuts or almonds, and with benzoin, storax, etc., in place of vanilla. The Mexicans, from time immemorial, were accustomed to prepare a beverage from roasted and pounded cocoa, dissolved in water, and mixed with maize-meal and spices. This they called chocolatl [*choco*, cocoa, and *latl*, water]. From the Mexicans the Spaniards derived an acquaintance with chocolate, and by them it was introduced into Europe, 1520. Chocolate is used in S. America, Spain, and Italy, more than in other parts of the world, though it is used to a considerable extent in Germany, and still more in the United States. Its use in Britain has given place in a great measure to that of the simpler cocoa unmixed with spices: see COCOA.

CHOCOLATE ROOT: see GEUM.

CHOCTAWS, *chŏk'tawz*, or CHAHTAS: Indian tribe, settled originally in what are now w. Ala. and s. Miss. They supposed themselves to have emerged from a cave in a sacred hill, and cultivated the soil to some extent. De Soto fought a battle with them, 1540; De Luna's Spaniards aided them, 1560, against the Natchez. When the French settled La., about 1700, the Choctaws became their allies, helped them in wars with the Natchez and Chickasaws, and admitted their missions and forts; they then had 40 villages and over 2,500 warriors. They afterward became friendly to the English, acknowledged the U. S. govt. 1786, were secured in the possession of their lands, and rendered service in the war of 1812 and that with the Creeks They began to move w. by 1800, and 1820 exchanged part of their lands for a region on the Arkansas. Ga. extended her jurisdiction to their territory and admitted them to citizenship; but they ceded, 1830, their remaining lands, in all 19,000,000 acres, receiving $20,000,000, besides $2,225,000 in money and goods. In this cession and emigration, and in their first settlement between the Arkansas, Canadian, and Red rivers, they were connected with the Chickasaws (q.v.). A mission of the American Board had been established among them 1818; the Presbyterians, Baptists, and Methodists came later. Thus assisted, they made gains in

civilization. By a constitution adopted 1838, and subsequently amended, they are governed by an elective chief and a house of representatives; they have trial by jury, supreme, civil, and probate courts, and justices of the peace. Their progress, like that of the Chickasaws, was interrupted by the war of secession, in which they took the Confederate side; their schools were closed, their buildings ruined, and their numbers reduced to 12,500. They were placed under a temporary govt. 1866, their slaves freed and provided for, and part of their lands taken from them. They have since attained a fair degree of prosperity, and now number 16,500, ranking next to the Cherokees among the various tribes in the Indian Territory. Their language is irregular, but has a grammar by C. Byington (Phila. 1870), a number of books produced by the missionaries, and a weekly paper, published at New Boggy.

CHODE: see CHIDE.

CHOICE, n. *choys* [F. *choix;* OF. *chois*, choice—from *choisir*, to choose (see CHOOSE)]: the determination of the mind in preferring one thing to another; option; the thing chosen; election: ADJ. select; precious; very good, or best; selected with care. CHOICE'LESS, a. without a choice. CHOICE'LY, ad. *-lĭ*, in a choice manner; excellently. CHOICE'NESS, *-nĕs*, the quality of having a particular value.—SYN. of 'choice, n.': option; preference; selection; election;—of 'choice, a.': select; precious; costly; exquisite; uncommon; rare.

CHOICE, in Psychology and Philosophy, see WILL.

CHOIR, n. *kwīr* [F. *chœur;* OF. *choir*, a choir—from L. *chorus;* Gr. *choros*, a dance in a ring, a company of singers]: a band of singers in a church; the place in the church where they sing. CHORUS, n. *kō'rŭs*, a number of singers singing together; the part of a song repeated at the end of every stanza; the refrain. CHO'RAL, a. *-ral*, pertaining to what can be sung by a choir. CHO'RALLY, ad. *-lĭ*. CHO'RIST and CHORISTER, n. *kŏr'ĭs-tėr*, one who sings in a choir.

CHOIR [L. *chorus*]: literally, the portion of the church assigned to the singers; and in all descriptions which concern the ritual it is so limited, including only the space from the western door or screen to the end of the stalls, while the part from the stalls eastward to the high-altar is called the presbytery. But in ordinary language, when designating a portion of a cathedral, and even as used by architects, it denotes the entire space inclosed for the performance of the principal part of the service. In this sense, it includes the choir proper and the presbytery, and corresponds to the chancel in parish churches. Where the church is cruciform, and the term is confined to the eastern limb, it comes to be entirely different from the choir in the ritual sense, or the stall-place, which in such a building is commonly situated either under the tower or in the

nave. In large churches, the aisle generally runs along each side of the choir, and frequently passes across the e. end of it; an arrangement very common in the larger churches of the continent which have polygonal or semi-circular terminations. Choir is the name given also to the singers of the choral service.

CHOIR-SCREEN, or CHOIR-WALL: screen or wall which divides the choir and presbytery from the side aisles. It is often very richly ornamented.

CHOISEUL-AMBOISE, *shwâ-zël' ŏng-bwâz'*, ETIENNE FRANÇOIS, Duc DE: Minister of Louis XV.: 1719, June 18 —1785, May 7. He was educated by the Jesuits, and, on the completion of his studies, entered the army. He fought bravely in the Austrian wars of succession; but only after he had attracted the fancy of the king's mistress, Madame Pompadour, did fortune really favor him. Through her influence, he was made lieut.-gen. 1748, ambassador to the courts of Rome and Vienna 1756, and Duc de Choiseul 1758. Choiseul-Amboise now became instrumental in bringing about a family league of the Bourbon monarchs in Europe; and in 1763, at the close of the war so disastrous to the French arms, he obtained, by his prudence and dexterity, milder terms for his nation than had been expected. This made him very popular, as did also his successful attempt to overthrow the Jesuits. In 1764, Madame Pompadour died, but the power of Choiseul-Amboise continued unabated. He conceived, and almost carried out, a plan for the formal emancipation of the Gallican church from papal influence, gave great attention to the improvement of the army and navy, developed the trade and industry both of the nation and of the colonies, and opened up anew an intercourse with India, whose native princes were assisted by French officers in their endeavors to expel the British from the peninsula. He had spies in every European court, and so ruled all diplomatic and political cabals that the Empress of Russia, who dreaded him, called him *Le Cocher de l'Europe* ('The Driver of Europe'). But the rise of Madame Dubarry, who succeeded Madame Pompadour in the royal affections, gradually alienated Louis from his able minister, and in 1770 he retired to his magnificent estate of Chanteloup, where he lived in princely splendor. After the accession of Louis XVI. Choiseul-Amboise received permission to return to Paris. He was often consulted, but never recovered his official position.

CHOISEUL-GOUFFIER, *gô'fē-ā*, MARIE GABRIEL FLORENT AUGUSTE DE: COUNT OF, French antiquarian: b. Paris, 1752, Sept. 27.; d. Aix-la-Chapelle 1817, June 20. He early displayed a particular interest in everything relating to Greece. His wish to visit this country was gratified in 1776, and in 1782 appeared the first volume of *Voyage Pittoresque en Grèce*, which attracted much attention and procured him a seat in the French Academy in 1784. The two other volumes appeared in 1809 and 1820. The first was entirely revised by him before his death. The same

year he was appointed ambassador to Constantinople, where he remained till 1791. The appointment of ambassador to London was then offered to him, but he remained at Constantinople and sent his official correspondence to the exiled French princes. This correspondence having fallen into the hands of the republicans the convention gave orders for his arrest, but he escaped by taking refuge in St. Petersburg, where Paul I. made him a privy-councilor, director of the Academy of Arts, and superintendent of the imperial libraries. He returned to France in 1802 and resumed his seat in the Academy. In 1814 he was made a peer of the realm. His antiquarian researches were chiefly inserted in the memoirs of the National Institute, and his very valuable collection of antiquities is now in the museum of the Louvre.

CHOISEUL-PRASLIN, *prâ-lăn*, Eugène Antoine *ĕ-zhān-ân-twân* Horace de, French statesman: b. 1837, Feb. 23. He was first elected to the National Assembly in 1871, and has been several times a member of the chamber of deputies. He is considered one of the leaders of the Republicans. In 1871 he was minister plenipotentiary to Italy; in 1880 he became secretary of state in the ministry of foreign affairs; and in 1887 was sent on a botanical expedition to Ceylon and the United States.

CHOKE, v. *chōk* [Icel. *kok*, the throat; *koka*, to swallow, to gulp; W. *ceg*, the throat; *cegu*, to swallow; AS. *ceocian*, to choke]: to stop the passage of the breath by filling the windpipe with some body, or by compressing or squeezing the throat; to smother or suffocate; to obstruct or block up; to hinder. Cho'king, imp.: Adj. suffocating: N. the act or feeling of being choked. Choked, pp. *chōkt*. Cho'ker, n. one who, or that which chokes; in *mil.*, two strong pieces of wood to compress and test the circumference of a fascine; a kind of stock or cravat worn by men, chiefly clergymen. Choke-damp, n. the carbonic acid gas of mines whose respiration is deadly: see Carbonic acid. Cho'ky, a. *-ki*, tending to choke. Choke-full, a.: see Chock-full, which is the proper spelling. Choke-berry, a species of pear-tree, *Pyrus arbutifolia*. Choke-pear, a kind of pear with a rough astringent taste, therefore swallowed with difficulty; a sarcasm, by which one is put to silence.—Syn. of 'choke': to suffocate; smother; stifle; strangle; throttle; hinder; check; offend.

CHOKE'-CHERRY: certain nearly allied species of Cherry (q.v.), of the Bird-cherry section of the genus or sub-genus, natives of N. America, having small fruit in racemes, and the fruit at first rather agreeable, but afterward astringent in the mouth. Some confusion has long existed as to the different kinds, and their botanical names (*Prunus* or *Cerasus Virginiana*, *serotina*, and *borealis*) are not more determinate than the popular ones. Perhaps they ought to be regarded as mere varieties rather than distinct species. They have a considerable resemblance to the Portugal Laurel, though the leaves are deciduous. The

bark is used as a febrifuge and tonic, under the name of *Wild Cherry Bark;* and by distilling it with water, a volatile oil is obtained from it associated with hydrocyanic acid, called *Oil of Wild Cherry.* This bark allays nervous irritation, and is suitable particularly as a first tonic in cases of recovery from fever or inflammation.

CHOKING: obstruction of the gullet, or of the passage leading to it, whether by compression of the throat or by morsels of food imperfectly chewed, or other substances accidentally chewed. For the consequences of choking in the human subject; see PHARYNX: ŒSOPHAGUS.

*Choking in Cattle.—Causes.*—These may be classified under two heads: 1. Those that depend on the material swallowed; 2. Those that depend on the animal swallowing. In the first class are sharp-pointed objects which become fixed into or entangled in the membrane lining the throat and gullet; solid masses too large to pass on to the stomach; dry farinaceous materials which clog in the passage. The second class of causes consists in inflammation of the throat, or irritation of the organs of deglutition; constrictions of the passage, as in crib-biting horses; ulceration of the œsophagus, which is apt to run after choking, and is the cause of a relapse; lastly, without any disease of the deglutating organs, an animal may be choked by eating too greedily, and imperfectly masticating or salivating its food.

*Symptoms.*—These vary according to the position of the obstruction. If high up in the pharynx, the animal cannot swallow, evinces great distress, and attempts to cough up the object. Saliva drivels from the mouth, the animal chews, and makes an occasional ineffectual effort to swallow. The breathing is very greatly disturbed. In some cases a large lump of food has become fixed in the larynx or upper part of the windpipe, and has suddenly suffocated the animal. When the obstruction is in the course of the gullet down the neck, the symptoms are very similar, though less urgent, and there is additionally the local sign of swelling, with the peculiar hardness or softness of the substance indicating its nature. When an animal is choked by a substance lodging in the gullet within the chest, the symptoms are more mysterious, and likely to mislead. The animal swallows; a considerable quantity of liquid may enter the gullet, but it is suddenly regurgitated or thrown up, as in the act of vomiting. The distress is great; and in the course of three or four days, unless the animal is relieved, it dies of prostration. In the ox, sheep, and goat, the most alarming symptoms, in any case of choking, arise from the paunch becoming distended by gas. Concerning this condition, see HOVEN.

*Treatment.*—Remove the obstruction with the hand, when it is possible. Cause the animal to swallow the substance, if possible, by giving it water or oil. Carefully push the offending agent down by a probang, if it is possible to effect this, and if withdrawal by the mouth is impracticable. In some cases, the gullet has to be cut into by a

qualified surgeon. After a case of choking, keep the animal on soft food, and attend to its general health, in order to avoid a relapse, which is of frequent occurrence in cattle.

CHOLAGOGUE, n. *kŏl′ă-gŏg* [Gr. *cholē*, bile; *egōgos*, a leader]: a medicine which acts on the liver, and increases the flow of bile.

CHOLEDOCHUS, n. *kŏl-ĕd′ŏ-kŭs* [Gr. *cholē*, bile; *doch′o-mai*, I receive]: the common bile-duct, conveying bile both from the liver and the gall bladder into the duodenum.

CHOLEPYRRHINE, *kŏl′e-pĭr′rīn:* brown coloring matter of human life. It is readily altered by reagents. The alteration in color produced by nitric acid has been proposed as a method of detecting bile in urine, which, if bile be present, becomes first green, then blue, and finally violet, when nitric acid is added to it.

CHOLER, n. *kŏl′ėr* [OF. *colere*, or *cholere*, choler, anger from Gr. and L. *cholĕră*—from Gr. *cholē*, bile]; the bile, the flow of which was supposed to cause anger, or the redness of the face in anger; anger; wrath; irascibility. CHOL′ERIC, a *ĭk*, easily irritated; irascible; excited by anger. CHOL′ERA, n. *-ă*, bilious vomiting and purging. CHOLERA-MOR′BUS [L. morbus, sickness, disease]: in the United States, the milder form of the disease; but in Britain, name of the malignant form called also ASIATIC CHOLERA. CHOL′ERA′IC, a. *-ā′ĭk*, per-taining to the disease cholera.

CHOLERA, *kŏl′ėr-a*, [Greek term used in the Hippocratic writings, but of indeterminate etymology, derived perhaps from *cholē*, bile, or from *cholera*, a water spout or gutter]: term applied to one of two or three forms of disease, characterized by vomiting and purging, followed by great prostration, amounting in severe cases to fatal collapse. The variety called *cholera sicca* (dry cholera) by ancient writers (in which collapse and death take place without discharges) is comparatively rare. The milder forms of cholera (cholera morbus and cholera nostras) occur almost every summer and autumn, even in temperate latitudes. The epidemic and fatal form of the disease (true or Asiatic cholera) is endemic in India and thence is propagated along the usual routes of travel, reaching western Europe usually through Persia, the steppes of Tartary, Russia, and the Baltic, at the same time extending to Egypt, Turkey, and southern Europe. These very fatal forms of the disease are commonly called Asiatic, Oriental, or epidemic cholera.

Asiatic Cholera is a specific epidemic disease due to the action of a micro-organism called the *comma bacillus* (from its curved shape resembling a [,]) or *Spirillum choleræ Asiaticæ*. After some hours or days of simple relaxation of the bowels, vomiting commences, and occurs again and again, accompanied by frequent and extremely copious discharges from the bowels, at first of matters colored with bile as usual, but in the end of colorless and turbid fluid

resembling water in which rice has been boiled (hence called rice-water discharges). These discharges (often to the extent of gallons of liquid), succeeding each other with the most alarming rapidity, act as a drain upon the fluids of the body generally; and by the changes they effect upon the blood, contribute to bring about the state called *collapse*. In this condition the patient lies motionless and apathetic, except when tormented by cramps, which are frequent; the surface is cold; the finger-ends, lips and tip of the nose become livid; the eyes are deeply sunk in the sockets, and often bloodshot; the tongue is clammy; the breath, without any sensible warmth when caught on the hand; the pulse is suppressed at the wrist, the breathing extremely slow and feeble; the heart just audible through the stethoscope. Purging and vomiting have ceased; even the urinary secretion is dried at its source. In fact, all the vital processes are nearly brought to a stand, and unless reaction comes, a few minutes, or at most a few hours, suffice to bring life to a close. Reaction in the most favorable cases is gradual and without accident; it is not unfrequently, however, accompanied by fever, closely resembling typhus, and constituting, at least in the temperate zone, one of the chief dangers of the progress of cholera.

Medicine is almost powerless against cholera except in the earliest stages, in which the treatment usually pursued in diarrhea (q.v.) has sometimes been found useful. Very remarkable restorative effects have been found to follow the injection into the veins of dilute solutions of saline matter, resembling as nearly as possible the salts of the blood which are drained away in the discharges. The patient is restored to life, as it were, from the very brink of the grave; but he revives for only a few hours, to fall back into his former condition.

The germ of cholera is excreted in the discharge from a patient and is conveyed to the well in the same way as that of typhoid fever. Flies and other insects may light upon these discharges and then pass to the kitchen or dining-room, and so contaminate the food; or (and this is the usual way in which great epidemics are started) the discharges may be thrown onto the ground or directly into the stream and so infect the water-supply of a community. The preventative of cholera is therefore obtained by boiling all the water, not only that used for drinking but also water employed in washing dishes and for bathing as well. Those in charge of a cholera patient should always disinfect the discharges by strong acid; which is inimical to the cholera germ, carbolic acid, or some other powerful germicide. All linen which has been in contact with the patient, whether it is apparently soiled or not, should be boiled for half an hour before it is sent to the laundry. The nurses and other attendants of the sick should observe great personal cleanliness and should always wash the hands before touching any article, especially before eating or drinking.

## CHOLERA INFANTUM.

CHOLERA MORBUS is a disease, the symptoms of which resemble those of Asiatic cholera, though usually of lesser severity. It occurs in temperate climates during the summer months. It is an acute inflammation or catarrh of the stomach and intestines, undoubtedly due to the action of some micro-organism. The specific germ has not yet been discovered and it may be that any one of several may produce the disease. It is probably introduced into the system in the food—it may be unripe or partially decayed fruit or decomposing fish or vegetables. The disease may perhaps be caused, not by the presence of the germ itself, but by the ingestion of its toxic products—in other words it may be a form of ptomain poisoning. The attack usually comes on in the night with nausea and vomiting, diarrhea, and colic. The vomiting is first of the contents of the stomach, but soon becomes bilious. The diarrhea is very profuse and watery, and the pain in the abdomen is paroxysmal in character. The attack may be fatal, but recovery in a few hours or a day or two is the rule.

*Treatment.*—The treatment consists in the administration of calomel followed by a dose of castor oil to expedite the discharge of the offending material which the watery discharges incident to the disease may be unable to dislodge. A mustard plaster should be applied to the abdomen to relieve the pain and control the vomiting. Cracked ice and cold water in sips may be given to assuage the thirst, which is a prominent and often distressing symptom, or if the vomiting persists an enema of a cupful of tepid water may be administered after each movement of the bowels.

*Cholera Nostras* is the name given to a similar or possibly the same disease when it occurs in epidemic form and continues for a longer time. The symptoms are the same as those of cholera morbus, and the treatment should be conducted along the same lines as that suggested for cholera morbus.

CHOLERA INFANTUM: this term embraces a group of general conditions which can scarcely be said to form one distinct disease, although its more prominent symptoms are quite marked. It receives different names in different countries. In France, it is called coloenteritis, follicular enteritis, and gastrointestinal catarrh. In England its generic name is diarrhea. In Germany it is usually called gastrointestinal catarrh. Although these names describe the location and general pathological lesions, they are somewhat misleading, as they fail to give a good idea of the real nature of the affection. Our older American physicians were accustomed to call cholera infantum infantile bilious remitent fever, and the more typical forms are well described by this name.

Its subjects are generally children between six months and two years old who have been exposed to the air of hot and moist apartments, or inhabiting houses situated on streets not well cleaned, and where there is decay of

garbage. But it is not unknown among those who are in good circumstances, live well, and are supposed to be surrounded by good sanitary conditions. It is especially frequent in bottle-fed infants, and impure milk is doubtless a factor in its causation.

The symptoms of its appearance are various, sometimes coming on suddenly with prostration and vomiting, but often insidiously, with occasional diarrhea. This may be very profuse, the sufferer becoming emaciated rapidly. Those having care of children in the summer or autumn need to exercise great vigilance at every appearance of intestinal trouble, particularly if the stools are of greenish and slimy character, or if they are very pale and contain quantities of curdy lumps. The characteristic symptoms of the disease is a peculiar withered and wrinkly appearance of the skin, difficult to describe but easy to recognize.

In the commencement of the attack it is well to give a gentle laxative and then chalk mixture or other antacid remedies, as bicarbonate of soda, or calcined magnesia, or carbonate of magnesia, or lime-water will be found useful. Minute doses of calomel, one-eighth grain, every two, three, or four hours, according to circumstances, is often very useful. This should be combined with a very minute quantity of an opiate, say from three to five drops of elixir of paregoric, two or three times a day or oftener. The use of the anodyne is simply for the purpose of checking the action of the bowels until the alterative commences to exert its effects in correcting the secretions. The aromatic syrup of rhubarb is a useful adjunct in many cases. The patient should be removed to a location where the air is salubrious. The open air under shade trees in a mountainous region is good, but the seashore, especially a sail on the open water, is better. Warm bathing, either in fresh or salt water, is almost always beneficial.

As important a question as all others combined is that of diet. If the child is not weaned the healthy female breast affords the best nourishment. The next to this is pure cow's milk, diluted; but it may disagree with the child. What can be substituted? Beef tea, made from the best beef extracts, or from the raw meat, is often of very great service, temporarily. Starchy foods, such as corn starch, farina, arrowroot, etc., are improper food, with one exception, and that is rice-water. For some reason this agrees better with the infant's stomach and is not so liable to fermentation. The infant foods, so extensively advertised, however beneficial they may be for healthy infants, are inadvisable when cholera infantum is present. Of course no case of cholera infantum should ever be treated by any but an experienced physician.

CHOLESTERINE, or CHOLESTERIN, n. *kŏ-lĕs'tĕr-ĭn* [Gr. *cholē*, bile; *stear*, tallow or fat]: white, fatty, crystallizable substance, found principally in bile. Cholesterine is one of those bodies termed by chemists lipoids, or non-saponifiable fats. It was discovered originally in gall-

stones, but is now recognized as an ordinary constituent (though occurring in very minute quantity) of bile, blood, and the tissue of the brain. It occurs likewise in pus, the contents of cysts, and other morbid fluid products.

It separates from its solutions in glistening nacreous scales, which, when examined under the microscope, appear as very thin rhombic tablets, whose obtuse angles are 100° 30′, and whose acute angles are 79° 30′. Different formulæ have been assigned for its composition, the one generally accepted being $C_{26}H_{44}O$. It is not always very easy of detection in animal fluids, but if, by its insolubility in water, acids, and alkalies, and its solubility in hot alcohol and ether, it has been recognized as a fatty substance, it may be readily distinguished from all similar substances by the measurement of the angles of its rhombic tablets. The best method of preparing cholesterine is by boiling gall-stones containing it in alcohol, and filtering the solution while hot. From this hot filtered solution it crystallizes as the fluid cools. Chemists have obtained substances known as *cholesterilins* and *cholesterones* from the decomposition of cholesterine.

CHOLET, *shō-lā′:* town of France, dept. of Maine-et-Loire, on the right bank of the Maine, 32 m. s.w. of Angers. Here, during the Vendean war, two actions were fought in 1793, in both of which the royalists were defeated. In the first, they lost their brave general Bonchamps; and in the second they were driven across the Loire, thus virtually deciding the war against them. Cholet has manufactures of fine woolen and mixed fabrics, and leather, and a trade in cattle. Pop. 15,350.

CHOLIC, a. *kŏl′ĭk* [Gr. *cholē*, bile]: of or belonging to bile; an acid obtained from bile; also CHOLEIC, a. *kŏ-lē′ĭk*. CHOLOIDIC, a. *kŏ loy′dĭk* [Gr. *eidos*, resemblance]: denoting an acid obtained from bile.

CHOLULA, *chō-lô′lâ:* formerly flourishing, now decayed, town of Mexico, 60 m. e.s.e. of the capital, and 15 w.n.w. of La Puebla. Cortes found in it 20,000 houses (indicating a pop. of 50,000–100,000), and as many more in the suburbs, and also 400 temples. Its most remarkable memorial of aboriginal times is a pyramid of clay and brick, surmounted on the top by a chapel of Spanish origin. The pyramid is 177 ft. in height, while the side of its base measures 480 yards. Cholula stands on the table-land of Anahuac, 6,912 ft. above the level of the sea. Pop. abt. 10,000.

CHOMEL, *sho-mĕl′*, AUGUSTE FRANGOIS: 1788, Apr. 13—1858, Apr. 10: French physician. He early entered the hospitals of Paris, and published *Essai sur les rheumatismes* (1813): *Elémens de pathologie générale* (1817); and *Traité des fièvres et des maladies pestilentielles* (1821). The last was attacked by Broussais, but the correctness of its doctrine was established. Chomel succeeded Laennec as prof. of medicine in the Faculty of Paris 1827; his lectures on

typhoid fevers, pneumonia, and rheumatism, reported by three of his students (3 vols. 1836), took high rank. His practice in later years was the most lucrative in France.

CHON'DA: town of Gwalior, 18 m. n.w. of the fort of Gwalior; lat. 26° 27′ n., and long. 78° e. It claims notice merely as the scene of a decisive victory gained by Sir Hugh, afterward Lord Gough, over the Mahrattas, 1843, Dec. 29.

CHONDRINE, or CHONDRIN, n. *kŏn'drĭn* [Gr. *chondros*, cartilage or gristle, a grain]: a substance resembling gelatine (q.v.), produced by the action of hot water on gristle. CHONDRODITE, n. *kŏn'drō-dīt*, one of the gems, occurring in grains of various shades of yellow and red. CHONDROLOGY, n. *-drŏl'ŏ-jĭ* [Gr. *logos*, discourse]: a treatise on cartilage.

CHONDRITES, n. plu. *kŏn'drīts* [L. *chondrus*, a kind of sea-weed]: fossil marine plants resembling the Irish moss of our own shores.

CHONDROPTERY'GII: see CARTILAGINOUS FISHES.

CHONETES, *kŏn-ē'tēs:* genus of fossil brachiopodous mollusca, nearly allied to the well-known genus *Productus*. It is characterized by its transversely-oblong shell, and by having the long margin of the ventral valve armed with a series of tubular spines. Twenty-nine species have been described from the Palæozoic formations.

CHONOS ARCHIPELAGO, *chō'nōs:* group of islands off the w. coast of Patagonia, lat. 44°–46° s., long. 74°–75° w. With the exception of a few of the most westerly, all are bare and scantily peopled, though several are of considerable extent.

CHONS, *kons*, or KHONSOU, *kon'sô:* an Egyptian deity worshipped at Thebes as the eldest son of Amen-Ra and Mut, and identified with the moon. In the Thebaid he was called also Neferhotep; the Greeks considered him a form of Hercules. He is represented, like Horus, as young, mummied, wearing a skull-cap, surmounted by the lunar disk, holding a crook and whip, and sometimes as hawk-headed. Later he was connected with Thoth, and said to have come from Nu or Han, the celestial waters, or identified with Horus and Sos. In the Ritual he is connected with the Phœnix, and charged with overthrowing the proud. A tablet found in a temple at Karnak enlarges these limited functions by recording his departure in an ark, in the 16th year of Rameses XII., to Bakhtan, to expel a demon which possessed the daughter of the king of that country and sister of the queen of Egypt, and his return, escorted by priests, 17 years later. The worship of Chons was common at the Ptolemaic period. His figure is found in bronze and porcelain. In the Pantheon he is the youngest of the divine circle, and his chief function that of the lunar gods.

CHONTALES, *chōn-tâ'lās:* district of Nicaragua, n.e. of lakes Nicaragua and Managua, s.e. of the dist. of

Segovia; which borders on Honduras. It is mainly occupied by the Alto Grande chain of the Cordilleras Mts., but tropical fruits, as well as those common in the temperate zones, abound, and extensive grassy plains support vast herds of cattle and horses. On the Mica and Bola, branches of the Bluefield river, are gold mines, worked by the early Spanish settlers, and still by the Indians of Libertad and other towns on the mountain slopes. There are also veins of silver, a coal-bed near lake Nicaragua, and much oak, pine, and other timber.

CHOOSE, v. *chôz* [F. *choisir*, to choose—from OF. *coisir;* AS. *cēosan*, to choose: Goth. *kiusan*, or *kausjan;* Dut. of Ger. *kiesen*, to examine, to prove, to test]: to examine with the view of selecting; to take by preference; to have the power to take; to adopt; to follow. CHOSE, pt. *chōz.* CHOOSING, imp. *chôz'ĭng.* CHOOS'ER, n. one who. CHOSEN, pp. *chō'zn.*—SYN. of 'choose': to prefer; adopt; follow; select; elect.

CHOP, n. *chŏp* [old Dut. *koppen*, to cut off: Dut. and Ger. *kappen*, to cut or hew, to chop: Scot. *chap*, to strike; *choppe*, a blow]: a piece cut or struck off; a piece of meat: V. to cut off or separate by the blow, or repeated blows, of a sharp instrument; to cut into small pieces; to mince. CHOP'PING, imp. CHOPPED, pp. *chŏpt.* CHOP'PER, n. an instrument for chopping; one who. CHOP-HOUSE, a restaurant in which hot meats are served. CHOPS, n. plu. small slices of meat chopped or cut from the loin or joint of mutton or pork.

CHOP, n. *chŏp:* in *China*, a permit or stamp; quality of goods; quantity. CHOPSTICK, n. a Chinese instrument for feeding.

CHOP, v. *chŏp* [Dut. *koopen*, to buy: Icel. *kaup;* Scot. *coup*, to buy and sell, to exchange (see CHAP 3)]: to barter; to exchange. CHOP'PING, imp. CHOPPED, pp. *chŏpt.* CHOP AND CHANGE, in *OE.*, to put one thing in place of another; to exchange. THE WIND CHOPS, the wind changes or veers. TO CHOP, or CHAP HANDS, in *Scot.*, to strike hands to keep them warm; also as in token of the conclusion of a bargain.

CHOP, n. *chŏp,* CHOPS, n. plu. [AS. *ceaplas*, the chaps or jaws: Wall. *chiffe;* the cheek; *chofe*, smack on the chops: Gael. *gab;* Ir. *gob*, the beak, the mouth (see CHAP 2)]: the sides of the mouth of a river or of a channel; the chap or jaw. CHOP-FALLEN, a. cast down in spirits; dejected. CHOPS, n. plu. the jaws.

CHOPIN, n. *chŏp'ĭn,* Scotch, CHAPPIN [F. *chopine*, a chopin—from *chope*, a beer-glass: Ger. *schoppen*, a liquid measure]: in *Scot.*, liquid measure equivalent to the English quart.

CHOPIN, *sho-păng',* FRÉDÉRIC: Polish pianist and musical composer: 1810–1849, Oct., 17: b. Zelazowa-wola, near Warsaw. He studied music at Warsaw under Prof. Joseph Elsner. An exile after the revolution of 1830, he took up his residence in Paris, where he lived admired

both professionally and in society. His health, always delicate, broke down in 1837, and he went for a time to Majorca, whence he returned, benefited by the change. After again suffering much from illness and depression of spirits, he visited England and Scotland 1848, and in London was welcomed with enthusiasm in public and private. He never recovered from the fatigues of this journey, but died in Paris, and was buried, by his desire, beside Bellini in the cemetery of Père-la-Chaise. His compositions, restricted to pianoforte music, are in high esteem among musicians, and are chiefly preludes, notturnos, polonaises, mazurkas, and valses, with a few concertos and sonatas. They are pervaded by a sensitive, restless, and highly poetic fancy, and abound in subtle ideas, graceful and original harmonic effects, and rich ornamentation. The so-called polonaises, mazurkas, and valses are not dance music, but dreamy compositions suggestive of the rhythm and character of these dances, in which the peculiarities of Polish national music are blended with French elegance and taste.

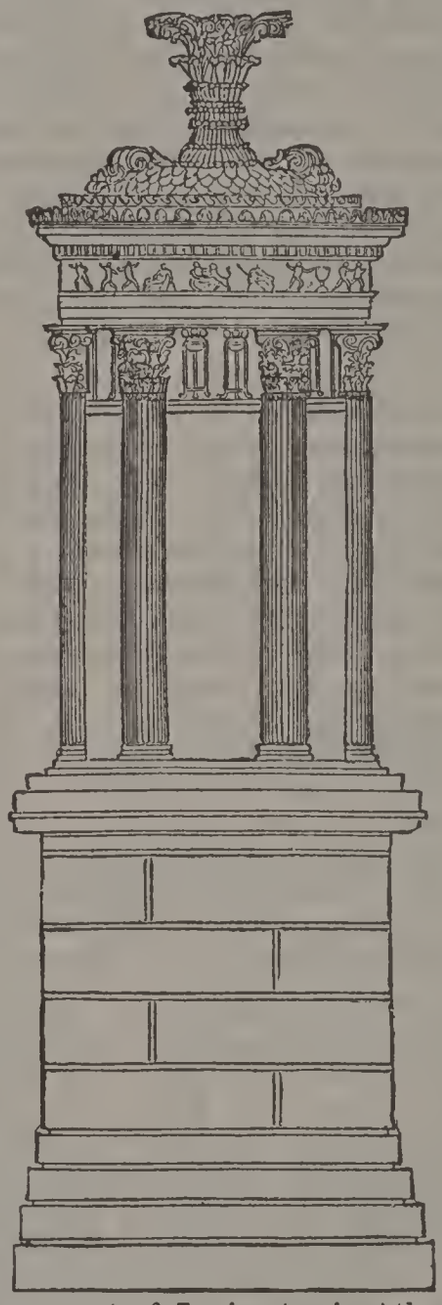
CHOPINE, or CHOPPINE, n. *chŏp-ēn'* [Sp. *chapin*, a clog with a cork sole]: high clog, or slipper, deriving its name, as is supposed, from the sound *chap, chop*, made by the wearers in walking. Chopines were of eastern origin, but were introduced into England from Venice during the reign of Elizabeth. They were worn by ladies under the shoes, and were usually made of wood covered with leather, often of various colors, and frequently painted and gilded. Some of them were as much as half a yard high; and in Venice, where they were universally worn, their height distinguished the quality of the lady. The C. is mentioned by Shakespeare in *Hamlet*. The accompanying representation of a C. is copied from Douce's *Illustrations of Shakespeare*.

Chopine.

CHOPPIN, SAMUEL PAUL, M.D.: 1828, Sep. 20—1880, May 2; b. West Baton Rouge, La. He graduated at Jefferson College, Philadelphia, 1846, and studied medicine further in New Orleans and Paris. He became resident surgeon of the Charity Hospital of New Orleans and demonstrator of anatomy in the Univ. of La. 1852; was one of the founders of the school of medicine in that city 1856, and of its *Medical News and Hospital Gazette;* was surgeon-in-chief on Gen. Beauregard's staff 1861; and in later years performed brilliant operations in plastic surgery and ovariotomy. As pres. of the La. board of health from its reorganization 1876, he sought vainly to enforce quarantine regulations and prevent the entrance of yellow fever which he believed to be never indigenous. He died at New Orleans.

CHORAGUS, n. *kŏ-rā'gŭs*, CHORAGI, n. plu. *kŏ-rā'jī* [L. *chorāgus;* Gr. *chorēgos*, he who had the care of the *chorus* and supplied what was necessary for it—from Gr. *choros*,

the chorus; *ago*, I lead]: among *anc. Greeks*, one who superintended a musical or theatrical entertainment and instructed the performers; one who paid the expenses of a chorus, or of such an exhibition, and entertained the performers: see CHORUS. CHORAGIC, a. *kŏr-ā'jĭk*, belonging to, or in honor of, a *choragus*, as 'a choragic monument.' The choragus who, on behalf of his tribe, had supported the chorus (q.v.), and who, in competition with the other



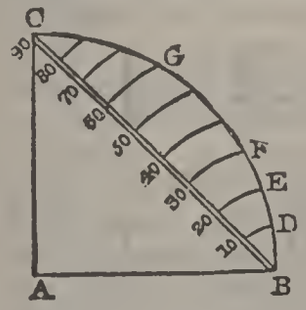
Choragic Monument of Lysicrates in Athens, restored.

tribes, had exhibited the best musical or theatrical performance, received a tripod for a prize; but he had the expense of consecrating it, and of building the monument on which it was placed. There was at Athens a whole street formed by these monuments, called the 'Street of the Tripods.' The figure represents the monument of Lysicrates, popularly known as the 'Lantern of Demosthenes.'

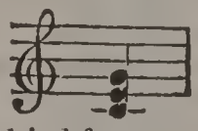
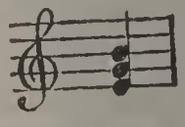
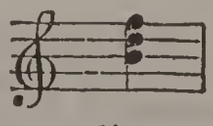
CHORAL, n. *kōr'ăl*, or CHORALE, n. *kōr-âl'ĕ*, CHORALES, n. plu. *kōr-âl'ēz* [It. *corale*, belonging to the choir—from *coro*, the choir; F. *chœur*, the choir]: melody to which sacred hymns or psalms are sung in public worship by the whole congregation in public unison. The melody of the C. moves in notes of a slow and strictly measured progression, and of a solemn and dignified character that disposes the mind to devotion. Although the term C. is now limited to the music of the Protestant Church, it belongs to the Christian Church at all times, as melodies still in use can be traced with certainty to have been sung by the congregations in the first centuries of Christianity. Among these is the *Te Deum* (q.v.) ascribed to St. Ambrose, still retained in the Lutheran Church, to the words, *Herr Gott, dich loben wir;* and in the Anglican Church (and of late years heard in other churches) to the words, 'We praise thee, O God.' The C. is intimately connected with the history of music. It is what the psalm-tune is, or rather what it properly is and formerly was. The pure, simple C. has, in a great degree, been cast aside in the British Isles, and in the United States, and its place occupied by tunes of a comparatively puerile style, which are frequently only adaptations of operatic songs and other profane pieces. In recent years, the choral style is again becoming more usual. CHORAL, a. *kō'răl*, of or belonging to the choir: see under CHOIR. CHORAL MUSIC, the ancient music of the church; music in parts for different voices: see SACRED MUSIC. CHORAL SERVICE, the musical service of the English Church, celebrated by a full complement of clergymen and choristers in a cathedral church, and when all those parts of the service are sung as ordered in the rubrics.

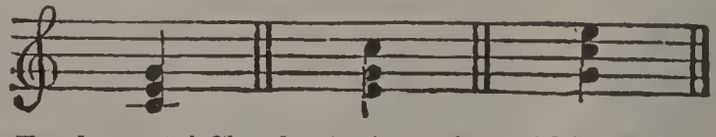
CHORD, n. *kawrd* [L. *chorda;* Gr. *chordē*, an intestine of which strings are made]: the string of a musical instrument; a straight line joining the two ends of the arc of a circle: V. to string a musical instrument. CHORD'ING, imp. CHORD'ED, pp. strung.

CHORD (chord of an arc of a curve): straight line joining the two extremities of the arc. A SCALE OF CHORDS is used in laying off angles. It is thus constructed: Let AB be the radius of the circle to which the scale is to be adapted. With centre A and radius AB describe a quadrant BEC. Divide the quadrantal arc BEC into nine equal parts BD, DE, etc. This may be done by taking a radius equal to AB, and from the centres B and C cutting the arc in G and F. As the radius is always equal to the chord of 60° or $\frac{2}{3}$ of a quadrant, the arc CB is thus divided into three equal parts, BF, FG, GC, and each of these parts may then be trisected by trial, as no direct method is known. Draw the chord of the quadrant BC; from B as a centre, and the chord of BD as a radius, describe an arc cutting BC at 10. with the chord of BE as



a radius, describe an arc cutting BC in 20; with the chord of BF, describe an arc cutting BC in 30; and in a similar manner, find the divisions 40, 50, 60, 70, 80. Then the arcs BD, BE, BF, being arcs of 10°, 20°, 30°, etc., respectively, the distances from B to 10, 20, 30, etc., are the chords of arcs of 10°, 20°, 30°, etc.; so that BC is a scale of chords for every 10°, from 0° to 90°. To lay down or measure angles with such a scale, the arc of measurement must be described with the chord of 60°.

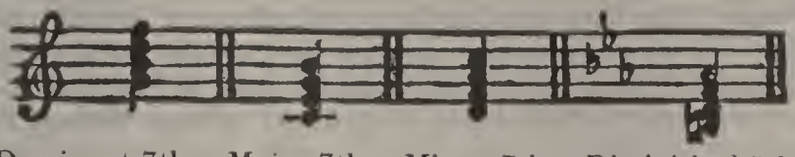
CHORD, in Music: simultaneous and harmonious union or different sounds, at first intuitively recognized by the ear, and afterward reduced to a science by the invention of the laws or rules of harmony: see HARMONY. Chords may consist of from two to five parts. Absolute chords of two parts are produced only by thirds or sevenths. Chords of more than two parts are either fundamental chords or inversions of them, and are divided into concords and discords. The union of sounds in all chords will be found, on analysing their component parts, to be an admixture of major and minor thirds. The common chord, or *Trias harmonica perfecta*, is the basis of all harmony, and consists of a base note, or prime, with its third and fifth above, thus:  These three sounds are at the distance of a third from each other. When the lowest third is the greater third, as above, the C. is a major cord; but when the lowest third is the lesser, thus:  the C. is called a minor chord. A chord of two minor thirds combined is called diminished, as the interval from the lowest note to the highest is less than a perfect fifth, thus:  The common C. admits of two inversions, according as one or other of its notes is made the base, or lowest note of the C., thus:



Fundamental Chord. 1st inversion. 2d inversion.

By adding another third above the common C., a C. of four parts is produced, which is called the chord of the seventh, because the highest note is a seventh above the bass. When the C. of the seventh is produced on the fifth of the scale, it is then called the dominant seventh, which is the most perfect species of the C. It then consists of a major third, perfect fifth, and seventh, the minor, which is the next harmonic produced by nature above the fifth.

The chord of the seventh may be formed also on any of the notes of the major or minor scale taken as a bass note, which produces the varieties of major, minor, and diminished sevenths, thus:



Dominant 7th. Major 7th. Minor 7th. Diminished 7th.

The chord of the seventh admits of three inversions, according as the notes above the fundamental note are used as bass notes. From its nature, it requires a resolution, and is therefore always followed by a common chord whose fundamental bass is a fifth below that of the seventh. For the chord of the ninth, see HARMONY. The first proper arranged system of chords is by Rameau, 1720, which has from time to time been extended and improved by Marpurg, Kirenberger, G. Weber, F. Schneider, Marx, and the late Professor S. W. Dehn, of Berlin.

CHOREA, n. *kō-rē′ă* [Gr. *choreia*, a dance]: disease popularly called St. Vitus's Dance, characterized by involuntary and irregular muscular contractions of the limbs and face, the mind generally being quite unaffected. The spasms of chorea differ from those of most other convulsive affections in being unaccompanied either by pain or by rigidity; being, in fact, momentary jerking movements, indicating rather a want of control of the will over the muscles, than any real excess of their contractions. In some cases, the disease resembles merely an exaggeration of the restlessness and 'fidgetiness' common among children; in others, it goes so far as to be a very serious malady and may even threaten life. Fatal cases, however, are rare, and in the large majority of instances the disease yields readily to treatment carefully pursued, or disappears spontaneously as the patient grows up. Chorea is a disease much more common among children of six years old, and upward, than at any other period of life: it is more common also among female children than among males. The treatment generally is the use of metallic tonics, such as zinc, copper, iron, and arsenic, sometimes preceded or accompanied by purgatives. Exercise in the open air is also recommended; and gymnastics afford material aid in the cure. It is to be observed that the name St. Vitus's Dance (Dance of St. Weit) was applied originally in Germany to a different form of disease from that above referred to—one closely approaching in its characters the epidemic 'dancing mania.'

CHOREPISCOPAL, a. *kō′rĕ-pĭs′kō-păl* [Gr. *chora*, place, country; *epis′kopos*, bishop]: relating to a local or suffragan bishop.

CHOREPISCOPI, *kō-rē-pĭs′ko-pī:* suffragan or subordinate bishops in the ancient church, having local and rural jurisdiction under the bishops of the cities to which their

districts were attached. They could confirm, consecrate churches, and appoint readers and subdeacons; but could not ordain without license from their superiors, administer diocesan affairs, or meddle with city parishes. Originally intended to facilitate missionary work in the country (i. e., *heathen* or *pagan*) parts, this office was so magnified by some of its occupants that it became a nuisance after the political establishment of the church. The council of Laodicæa attacked it 360, and it had disappeared in the East before 500. In the West it was mainly suppressed by the 10th c., but lingered in some places till the 13th. It was nominally revived in England 1534, and really about 1870, by the creation of suffragan bishops of Dover, Bedford, Nottingham, and Colchester, under the Abp. of Canterbury and the bps. of London, Lincoln, and St. Alban's.

CHORIAMBUS, n. *kō′rĭ-ăm′bŭs* [Gr. *koreios*, a trochee; *iambos*, an iambus]: a poetic foot consisting of four syllables —the first and fourth long, the second and third short; a trochee and an iambus united. CHO′RIAM′BIC, a. *-bĭk*, pertaining to.

CHORION, n. *kō′rĭ-ŏn* [Gr. *chorion*, skin]: the exterior membrane investing the fœtus in the womb; in *bot.*, a fluid pulp composing the nucleus of the ovule in its earliest stage. CHO′ROID, n. *-royd* [Gr. *eidos*, form]: a membrane resembling the chorion; the vascular membrane or coat of the eye (q.v.).

CHORISIS, n. *kŏr′ĭ-sĭs* [Gr. *chōrīzo*, I separate]: in *bot.*, separation of a lamina from one part of an organ so as to form a scale of a doubling of the organ; also called *de-duplication.*

CHORLEY, *chawr′lē*: town in Lancashire, England, on a hill on the Chor, 9 m. s.s.e. of Preston. It has an ancient parish church, supposed of Norman origin; and manufactures of cotton-yarn, jaconets, muslins, fancy goods, calicoes and ginghams. In the vicinity are several coal-mines, a lead-mine, besides mines and quarries of iron, alum, slates, millstones, etc. Pop. about 27,000.

CHORLEY, *chawr′lĭ*, HENRY FOTHERGILL: 1808, Dec. 15–1872, Feb. 16; b. near Billinge, Lancashire, England: musical critic and author. He early forsook business in Liverpool for literature in London, and after the usual difficulties became musical editor of the *Athenæum.* This post he held 35 years. His vigorous advocacy opened the way for the production in London of Gounod's *Faust.* C. wrote many songs, the librettos of sundry operas, a few works of fiction, *Conti the Discarded and other Tales* (1835); *Sketches of a Seaport Town* (1835); *Lion, a Tale of the Coteries* (1839); and *Pomfret* (1845); each in three vols.; *Memorials of Mrs. Hemans* (2 vols., 1836); *Religion and Morals of Genius*; and in the sphere wherein he was most successful, *Music and Manners in France and North Germany* (3 vols., 1841) *Modern German Music* (2 vols., 1854); and *Thirty Years' Musical Recollections* (2 vols., 1862). He died in London.

CHOROGRAPHY, n. *kō-rŏg′ră-fĭ* [Gr. *chōros*, a place or country; *graphē*, a writing]: the description of a region or country with a map of it. CHOROG′RAPHER, n. *-ră-fẽr*, one who describes a particular region or district and makes a map of it. *Note.—Topography* enters into minute details; *geography* refers to the whole earth, or a part of it in relation to the whole.

CHOROSIS: a wrong spelling of CHORISIS.

CHORTLE, v. *chŏr′tl*: a factitious word first used by L. Carrol in his extravaganza *Through a Looking Glass:* to snigger and chuckle for joy.

CHORUS [see CHOIR]: among the ancients, a band of singers and dancers employed on festive occasions of great pomp, also in the performance of tragedy and comedy on the stage. In the time of the Attic tragedy, the chorus consisted of a group of persons, male and female, who remained on the stage during the whole performance as spectators, or rather as witnesses. When a pause took place in the acting, the chorus either sang or spoke verses having reference to the subject represented, which served to increase the impression produced by the performers. At times the chorus seemed to take part with or against the persons in the drama, by advice, comfort, exhortation, or dissuasion. In early times, the chorus was very large, sometimes consisting of upward of 50 persons, but afterward it was much reduced. Its leader was termed the coryphæus. The charge of organizing it was considered a great honor among the citizens of Athens. The person appointed for this purpose was called the *choragus* (q.v). The honor was very expensive, as the choragus had to pay all the expenses incurred in training the members of the chorus to perform their parts efficiently. They were, beside, fed and lodged by him during training-time, and he had also to provide for them masks and dresses. At times, the chorus was divided, and spoke or sang antiphonally. These divisions moved from side to side of the stage, from which movement originated the naming of the single songs or stanzas, such as strophe, antistrophe, and epode. How the musical element of the ancient chorus was constituted or composed, is not known with certainty. Possibly, it was only a kind of rhythmical declamation, and doubtless very simple. It was accompanied by flutes in unison. With the decline of the ancient tragedy, the chorus also fell into disuse; and only lately has there been an attempt to produce the same on the stage in the manner of the ancients, as, for example, in Schiller's *Bride of Messina.*

In modern times, by chorus is understood the union of singers or musicians for the joint performance of a musical work.

Chorus is the name also of a musical composition for numerous voices, either with or without accompaniment, and intended to express the united feelings of a mulititude. The musical chorus is the only artistic means by which a simultane-

ous movement or sentiment of a multitude can be represented in the drama, the language or text being always of a simple rhythm, permitting only of a limited movement suited to the combination of a multitude. It is, however, not always necessary that every part of the chorus should manifest the same feeling or sentiment. Two or more parts of the chorus may act against each other, as suits the purport of the drama. Double, triple, and quadruple choruses are found in the old Italian compositions for the church. In modern times, the chorus is much used, and with great effect, in operas, especially those of Meyerbeer and Wagner. In the oratorio, the chorus is of the greatest importance, and the numbers now employed to sing the chorus far exceed anything attempted a century ago; but this is not always an advantage, for the *tempi* must necessarily be taken much more slowly, which has a sluggish effect; while increase in the mere number of voices does not always produce a greater power of sound. The chorus of 35 well-trained voices from the pope's chapel, who sang at the coronation of Napoleon I., in the cathedral of Notre Dame, Paris, produced a far greater and more wonderful effect when they entered singing the *Tu es Petrus*, than another chorus of hundreds of voices, and 80 harps, that had been assembled and trained for the same occasion, in expectation of surpassing all that man could imagine. The greater the number, the greater is the difficulty in obtaining unity.

Chorus, in organ-building, is the name given to stops of the mixture species, some of which contain 2, 3, 4, 5, 6, or more pipes to each note, tuned at consonant intervals in relation to the fundamental stops.

CHOSE, n. *shōz* [F. *chose*, a thing—from mid. L. *causa*, a cause, a thing: It. *cosa*]: in *law*, a thing; a matter; movable property; a fixture on a property; in the law of England, that kind of property which consists not in possession of a thing, but in the legal right to possess it. As this right can, in general, be vindicated and made available only by means of an action, the property to which it relates, whether real or personal, is called a thing (*res* or *chose*) in action, to distinguish it from a thing already in possession. Money due upon bonds and bills, goods bought and not yet delivered, are examples of choses in action, as is also the right to compensation for damage occasioned by breach of contract. In England, 'by the strict rule of the ancient common law, no chose in action could be assigned or granted over, because it was thought to be a great encouragement to litigiousness, if a man were allowed to make over to a stranger his right of going to law. [See CHAMPERTY.] But this nicety is now not so far regarded as to render such a transaction really ineffectual. It is, on the contrary, in substance, a valid and constant practice; though, in compliance with the ancient principle, the form of assigning a chose in action is in the nature of a declaration of trust, and an agreement to permit the assignee to make use of the name of the assignor,

in order to recover possession..... The king is an exception to this general rule, for he might always either grant or receive a chose in action by assignment; and our courts of *equity*, making the rule itself give way to the expediency, in a commercial point of view, of facilitating the transfer of property, allow the assignment of a chose in action as freely and directly as the *law* does that of a chose in possession.'—Stephen's *Commentaries*, ii. p. 45. One would imagine that the more convenient and philosophical arrangement would be, by the interposition of the legislature, to make law conform at once to equity and expediency. This change has been made in many states of the Union, so that an assignor of a chose in America has now the right to sue in his own name, as though he were a king in England; such an assignor must meet all defenses which might have been interposed to an action brought by the original owner.

CHOSEN and CHOSE. See under CHOOSE.

CHOSROES. See KHOSRU.

CHOTA NAGPORE, *chô'tâ nâg'pôr*, or CHUTIA NAGPUR, or NAGPORE THE LESS: one of the lower provinces of Bengal, containing five British collectorates; besides seven tributary minor states, forming the s.w. frontier agency. Area of the British divisions, 26,966 sq. m.; of the remainder, about 17,000 m. more. The inhabitants are chiefly aboriginal tribes, now converted to Christianity. The chief products are coal, jute, tea, and indigo; iron also is found. The Bengal-Nappur railway has opened up the province. Pop. 4,900,000.

CHOTYN, *chō-tēn'*, or KHOTIN, *chō-tēn'*, or CHOCZIM, *cho'chim:* town of Bessarabia, on the s.w. frontier of Russia, on the right bank of the Dniester, 110 m. n.n.w. of Jassy, about 20 m. s.w. of Kamienic. Its position made it long a bone of contention; it was fortified for the Turks by French engineers, 1718; taken by the Poles or Russians, 1730, '69, '88; and ceded to Russia, 1812. It is still a military post, with some trade in army supplies. Pop. about 21,000.

CHOUANS, *shô-ŏng':* bands of insurgent Royalists, who, during the French Revolution, organized a reactionary movement in Brittany. They obtained their name from their leader, Jean Cottereau. This person, who had been a smuggler, went by the name of Chouan—a corruption, it is said, of *chat-huant* ('screech-owl')—because, while he and his accomplices were engaged in their nocturnal work, they were wont to be warned of their danger by some one on the watch imitating the cry of this bird. At the period of the revolt, however, he followed the humble occupation of a clog-maker. The first indications of an anti-revolutionary spirit in Brittany manifested themselves in the beginning of 1791, when several trees of liberty were destroyed at night, and other more serious outrages committed. These disturbances were fomented by seditious priests. In 1792, an insurrection was planned by the

Marquis de la Rouarie, with the sanction and approval of the two brothers of Louis XVI. The agents of the marquis entered into communications with Jean Cottereau—well known for the reckless audacity of his character—and other smugglers; but they were arrested, and the carrying out of the insurrection devolved upon the latter. The *Chouanerie*, as the insurrection was called, at first disgraced itself, both by drunken license and by cruelty. After several successful exploits of the guerrilla sort, Jean Cottereau perished in an engagement, 1794, Jul. 28, near the wood of Misdon, the theatre of his first efforts. Before this, however, other and more illustrious leaders had appeared in Brittany to direct the movement, chief of whom were Georges Cadoudal (q.v.) and Charette. Through their endeavors it was more widely extended, and for a time seemed to imperil the security of France, but was suppressed toward the close of 1799. Petty *spurts* of insurrection, however, broke out till about 1803, when the *Chouanerie* ceased for awhile. In 1814–5, it again made its appearance on both banks of the Loire; and after the July revolution, was once more excited by the Duchess of Berry on behalf of the Duke of Bordeaux, but crushed by the energetic measures of M. Thiers.

CHOUGH, n. *chŭf* [AS. *ceó;* Dut. *kauwe;* Dan. *kaa;* F. *choucas;* Sp. *chova*], (*Fregilus*): genus of birds of the crow family (*Corvidæ*), but approaching to the characters and appearance of the starlings (*Sturnidæ*). The length of the bill has induced some naturalists, among whom was

Chough.

Cuvier, to place them beside the hoopoes, but this is now generally regarded as an error; they agree with crows in having their nostrils covered with stiff bristles directed forward, and in their habits. The beak is longer than the

head, strong, arched, and pointed, and of reddish color. The tail is slightly rounded. The only European species is the common C., called sometimes the Cornish C., or red-legged crow (*F. graculus*), a widely distributed but very local bird, inhabiting the Swiss Alps, the high mountains of Spain, of Greece, of India, and of Persia, the s. of Siberia, the n. of Africa, and parts of the British sea-coasts; but almost exclusively confined to situations where there are high cliffs. In these it usually makes its nest; sometimes, however, in ruined towers. Its long hooked claws enable it to cling easily to a rough rock, but it seems unwilling even to set its feet on turf. It lives in societies like the rook. It feeds on insects, berries, grubs, and grain. It is easily tamed, becomes very familiar and forward, and exhibits in the highest degree the curiosity, the pilfering disposition, and the delight in brilliant or glittering objects, which characterize others of the crow family. —Other species of C. are known, natives of Australia, Java, etc. Some naturalists unite the chocards and the choughs into one genus.

CHOULES, *chōlz*, JOHN OVERTON, D.D.: 1801, Feb. 5 —1856, Jan. 5; b. Bristol, England. He studied theol. in the Bapt. College at Bristol, came to America 1824, taught at Red Hook, N. Y., 1825–27, and was ordained pastor of the Second Bapt. Church at Newport, 1827, Sep. He held similar charges at New Bedford, Mass., 1833–37; Buffalo, 1837–41; New York, 1841–43; Jamaica Plain near Boston, 1843–47, and again at Newport from 1847. During most of this time he had pupils; he was successful as a teacher, gifted socially, and intimate with Webster and other eminent men. He edited Neal's *History of the Puritans* and other books, completed Smith's *History of Missions* (2 vols., N. Y., 1832) and Hinton's *History of the United States* (2 vols., 1853), and wrote *Young Americans Abroad* (1852) and *Cruise of the Steam Yacht North Star* (1854), on which he had accompanied Cornelius Vanderbilt to Europe. He died in New York.

CHOUSE, v. *chows* [Turk. *chiaous*, or *chiaus*, an interpreter—from one of them in 1609 attached to the Turkish embassy in England swindling the Turkish merchants out of £4,000]: to cheat; to defraud; to swindle: N. a cheat; one cheated. CHOUS'ING, imp. CHOUSED, pp. *chowzd*.

CHOUTEAU, *shō-tō'*, AUGUSTE: 1739–1829, Feb. 24; b. New Orleans: founder of St. Louis. The director-gen. of La. commissioned Laclède to establish the fur trade in the region w. of the Mississippi. C. joined the expedition and was placed in command of the boat. Leaving New Orleans 1763, Aug., he reached St. Genevieve in Nov., and went 61 m. farther, selecting for the chief trading-station a point which he named St. Louis. Here operations were begun under his charge 1764, Feb. 15, and here he remained during his long life.

CHOUTEAU, PIERRE: 1749–1849, July 9; b. New Orleans. As a boy he accompanied his brother Auguste up the Mississippi and was associated in his subsequent

activities, outliving him 20 years. Their name, wrote Nicollet 1842, 'is still a passport that commands safety and hospitality among all the Indian nations north and west.'

CHOUTEAU, PIERRE, JR.: 1789, Jan. 19—1865, Sep. 8; b. St. Louis: son of Pierre C. At the age of 15 he was a clerk for his uncle and father, but soon began business for himself. About 1806 he visited Dubuque in canoes, to trade with the Sacs and Foxes. Later he followed the Indians in their migrations to the sites of Kansas City, St. Joseph, and Council Bluffs, and even to the mouth of the Yellowstone and Fort Benton, as well as up the Mississippi to St. Paul. He and others purchased, 1834, the interest of John Jacob Astor in the American Fur Co.: the company established under his name, 1839, controlled the fur trade east of the Rocky Mts., and reached s.w. to Santa Fé, and n. to the Falls of St. Anthony. C. helped frame the first constitution of Mo. 1819. He lived long in New York, looking after his immense business interests, but died in St. Louis.

CHOW-CHOW, n. *chow-chow:* a Chinese sweetmeat; a kind of mixed pickles.

CHOWDER, n. *chow'dĕr* [F. *chaudière,* a mess, a pot-ful: comp. Scot. *chow,* or *chaw,* a mouthful for chewing]: fresh fish boiled with biscuit, pork, onions, etc.; applied to any mixed savory stew: V. to make a chowder of.

CHOWKEYDAR, n. *chowk-ī-dâr'* [Hind. *chaukidâr,* a watchman—from *chauk,* a police-office]: in *India,* a watchman of house property or of land.

CHOWS, n. *chowz,* or CHEWS, n. *chôz* [OF. *chou,* general name for coal]: in *Scot.,* coals of medium size, as distinct from *dross* and large.

CHOYA: see CHAY ROOT.

CHRESTIEN (or CHRETIEN) DE TROYES, *krā-teăng' dĕh trwâ':* b. at Troyes in Champagne, 11th c. :French poet. He is supposed to have been attached to the court of Philip of Alsace, Count of Flanders (1168–91); but nothing is known of his life, though he was highly esteemed in his own age and for some time afterward. He wrote *Irec et Énide, Clizés,* or *Cliget, Le Chevalier au Lion, Guillaume d'Angleterre, Le Chevalier de la Charette,* and *Perceval le Gallois.* These give C. the highest rank among early French romancers; four of them have been printed. At least two deal with the Arthurian legends, and the first supplied material to Lord Tennyson. Two others, *Tristan* and *Le Chevalier de l'Epée,* are lost. C. also wrote songs and imitations of Ovid: many other romances are doubtfully attributed to him.

CHRESTOMATHY, *krĕs-tŏm'a-thĭ* [lit., that which is useful to learn]: book of extracts with notes, to assist in acquiring a language. The practice of thus collecting marked passages seems to have begun with the Greeks. The term is especially, but not exclusively, applied to works in the Hebrew language.

CHRISM, n. *krizm* [OF. *chresme*, the sacred oil—from Gr. *chrisma*, ointment. F. *chrisme* consecrated oil]: consecrated oil; unction. name given to the oil consecrated on Holy Thursday, in the Rom. Cath. and Greek Churches, by the bishop, and used in baptism, confirmation, orders, and extreme unction. There are two kinds of C.—the one, a mixture of oil and balsam, is used in baptism, confirmation, and orders; the other, merely plain oil, is used in extreme unction. CHRISMAL, a. *krĭz'măl*, pertaining to chrism. CHRIS'MATORY, n. *-mă-tẽr-ĭ*, a vessel for chrism. CHRISOM, or CHRISOME, n. *krĭz'ŭm*, white vesture laid by the priest on the child in former times at baptism, to signify its innocence. It was generally presented by the mother as an offering to the church, but if the child died before the mother was 'churched' again, it was used as a shroud. By a common abuse of words C. came to be applied to the child itself. A C. child is a child in a C. cloth. As late as Jeremy Taylor (*Holy Dying*, c. i., s. 2), we have the following: 'Every morning creeps out of a dark cloud, leaving behind it an ignorance and silence deep as midnight, and undiscerned as are the phantasms that make a chrisome child to smile.' CHRISMA'TION, n. *-mā'shŭn*, the act of applying the chrism or consecrated oil.

CHRIST, n. *krīst* [Gr. *christos*, anointed]: the Anointed; the Messiah. CHRISTEN, v. *krĭs'n* [*lit.*, to make a Christian]: to baptize and name in the name of the Father, Son, and Holy Spirit. CHRISTENING, imp. *krĭst'nĭng:* N. the act of baptizing and naming; initiation into the Christian religion; a term often used as equivalent to baptism (q.v.). It is disliked by some, as favoring the doctrine of baptismal regeneration; being, if taken literally, expressive of the notion that a person is *made a Christian* in baptism. But, like many other terms, it is frequently used without any doctrinal reference. CHRISTENED, pp. *krĭs'nd*. CHRISTENDOM, *krĭs'n-dŭm*, the countries inhabited by those professing to believe in the Christian religion. CHRISTIAN, n. *krĭst'yăn* [AS. *cristen*, a Christian — from *cristen*, Christ: L. *christĭānus*, a Christian]: a disciple of Christ; a believer in Christ. ADJ. pertaining to Christ, his doctrines, or his church. CHRISTIANITY, *krĭst-yăn'ĭ-tĭ*, or *krĭs-tĭ-ăn'ĭ-tĭ*, the religion of Christians, its doctrines and precepts. CHRISTIANIZE, v. *krĭst'yăn-īz*, to convert to Christianity. CHRIST'IANI'ZING, imp. CHRIST'IANIZED, pp. *-īzd*. CHRIST'IANIZA'TION, n. *-ī-zā'shŭn*, the act of converting to Christianity. CHRISTIANISM, n. *krĭst'yăn-ĭzm*, a word used in contradistinction to Christianity to denote outward or affected Christianity; the state of being wholly destitute of the living power of the Christian's faith. CHRIST'LESS, a. without the true knowledge or spirit of Christ. CHRISTOLOGY, n. *krĭs tŏl'ŏ-jĭ* [*Christ*, and Gr. *logos*, a discourse]: a discourse or treatise on Christ.

CHRIST, THE: title of our Savior (see JESUS), now in general use almost as a name or as part of his name. It corresponds exactly in meaning and use with the Hebrew word MESSIAH (q.v.); so that this title given to Jesus of

Nazareth, is an acknowledgment of him as the Divine Savior long promised to the house of Jacob and to the human race. As prophets, priests, and kings were anointed on being called to their several offices (1 Kings i. 34, 39; 1 Sam. xvi. 13; Exod. xxix. 7), so the Savior was anointed as at once prophet, priest, and king; the Holy Spirit, often represented under this figure, being poured forth from the Father without measure upon him to qualify his human nature for all that belonged to his mediatorial office and work.

The whole system of Christianity depends on the doctrine of the PERSON OF CHRIST; not on the accurate adjustment of that doctrine in a scheme of universal philosophy or psychology, to which adjustment nothing more than an approximation is possible to the human mind; but on the adequate presentation of the *fact* of the union of God and man in Christ's Person. An essential difference necessarily exists on almost every point between the systems of doctrine maintained by those who do and by those who do not acknowledge the fact of this union. Some of the early heretics maintained an opinion, which has long ceased to have any supporters, that the body of Christ was not a real body, but a mere visionary appearance: see DOCETÆ and GNOSTICS. The opposite extreme is that of Socinians, by whom Christ is regarded as a mere man; while Arians (q.v.) regard him as in his *pre-existence*—i. e., before his *incarnation*—the highest of all created beings. Against these views, the doctrine which has been generally received in the church accords with the definition set forth by the council of Chalcedon (q.v.) that Christ is 'God and man in two distinct natures and one person.' This doctrine, of course, bears intimate relation to that of the TRINITY (q.v.) which, if reduced to its strictly biblical terms, is the doctrine of the *Father and the Son and the Holy Spirit—one God.* (For a general view of this subject, see Prof. Schaff's art. 'Christology,' in *Schaff-Herzog Encyc. of Relig. Knowledge.*) The proof of the whole doctrine of Christ's Person may almost be said to consist in a proof of the proper *divinity* of Christ, his real *humanity,* although equally important, being no longer disputed. And this proof is found, not so much in particular texts which directly assert the divinity of Christ—although such texts are important—as in the multitude of texts which imply it, and admit of no reasonable or natural explanation apart from it; and in showing that certain doctrines are most plainly taught in Scripture which cannot be maintained without this.

The ancient Apollinarians, Eutychians, Monophysites, etc., regarded Christ as having only one nature—a *compound* of the divine and human; but such a notion as that Christ had only a human *body,* the divine nature supplying the place of a soul is held to be subversive of the whole Christian system; and his human nature, to be real, must be viewed as consisting both of a true body and a true soul. His human nature never existed, however, apart from his

divine nature, and was 'conceived by the power of the Holy Ghost.'

Closely connected with this subject is that of the *humiliation* and consequent *exaltation* of Christ in his character of mediator between God and man; a subject, to the former branch of which belongs the whole doctrine of the *work* of Christ for the redemption of sinners, including the great doctrine of ATONEMENT (q.v.). To the latter belongs the doctrine of the reward of his work, in his exaltation as the divinely human Son of God at the right hand of the Father; and having all things put under his feet; exercising dominion as king not only in his church, but over all things for the advancement of the salvation of his church, and of every member of it, and for the bringing in of a universal righteousness; while also he sends forth the Holy Spirit to apply to men the blessings, which, as the reward of his work, he has mediatorially obtained for them; and still continuing to act as a priest, makes continual INTERCESSION (q.v.), founded upon his work and sacrifice: see CHRISTOLOGY.

CHRIST, ORDER OF, IN PORTUGAL: order of the Templars as revived in Portugal, 1317. When the Templars were expelled from France, and their property confiscated by Philippe le Bel, with the sanction of Pope Clement V., they were received into Portugal, and their order revived, under the title of 'the Order of our Lord Jesus Christ.' With some difficulty Pope John XXII. was induced to sanction the new order. The knights of the order of Christ joined the Portuguese in all their crusades against the infidel, and also in their African and Indian expeditions, receiving in compensation continual additions to their own possessions. The grand prior of the order was invested by Pope Calixtus III. with power equal to that of a bishop; and, as an encouragement to adventure, the knights were promised all the countries which they might discover, to be held under the protection of Portugal. At length, their wealth and power excited the jealousy of the kings of Portugal; their future acquisitions, and, subsequently, even their actual possessions, were declared to be crown possessions, and the offices of administrator and grand-master were transferred to the crown. A fine cloister belonging to the order is still seen at Tomar, to which place the seat of the order was transferred from Castro-Marino 1366. The members took vows of chastity, poverty, and obedience, till the pope released them from the first two, on condition of their applying the third part of their revenues to the support of Tomar cloister, the priests of which were bound by the

Badge of the Portuguese Order of Christ.

three vows. This cloister is now a theological institution for the instruction of the priests of the order.

It is said that the order still possesses 26 villages and farms, and 434 prebends. It is very numerous—consisting

Star of the Portuguese Order of Christ.

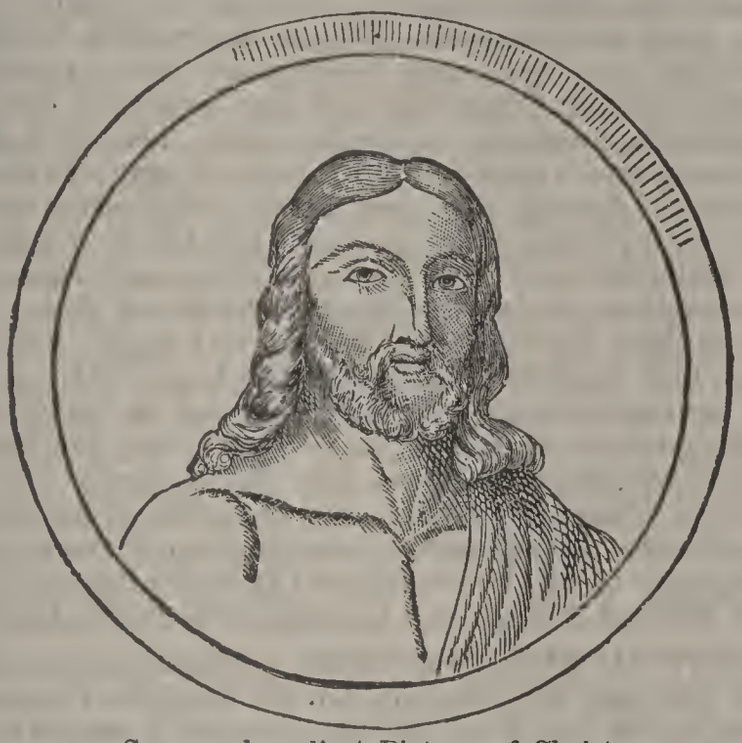
of six knights of the Grand Cross, 450 commanders, and an unlimited number of knights. Rom. Catholics of noble descent alone are admitted, and foreigners are excluded from participation in the revenues, being in return exempted from its rules. The star and badge of a Knight Grand Cross are represented in the illustration.

CHRIST, The Papal Order of: branch of the Portuguese order, created by Pope John XXII. It has only one class. The decoration and star are represented in the illustration.

Badge of the Papal Order of Christ.

CHRIST, Pictures of: symbolical or pseudo-historical portraits of the Savior. To represent the form and countenance of C. in a manner that shall even approximate the ideal latent in the minds of men, is unquestionably the most sublime and the most difficult work which an artist can undertake. It is the highest pictorial effort of the creative faculty. From a very early period in the history of the church we can trace the growth of the endeavor. At first, indeed, the horror entertained for the idols of the pagans must have inspired Christians with an aversion to images or pictures of the Savior. Gradually, however, as paganism disappeared and time removed C. further from his people, this feeling would subside, and the longing would arise to possess some representation of him on which the eye might rest with pious delight. When Christian art originated is not precisely known; it is usually dated from the time of Constantine. Nevertheless—as Lord Linsday remarks, in his *Sketches of the History of Christian Art* (Lond. 1847)—'it would be more

correct to say that it then first emerged above ground; its earliest efforts must be sought for in the catacombs.' In these subterranean excavations, forming a maze of unknown extent and labyrinthine intricacy, to which the Roman Christians had recourse in the days of persecution, are found the first traces of Christian sculpture and painting. The *sarcophagi* of the martyrs and confessors, of the heroes and heroines, of the bishops, and, in general, of those of higher mark and renown, were painted over with the symbols and devices of Christianity. The parables were the chief source from which these sepulchral artists drew



Supposed earliest Picture of Christ:
From a Ceiling in the Catacombs of St. Calixtus at Rome.

their symbols. Christ is painted as the good shepherd in the midst of his flock, or, with 'pastoral pipe,' seeking the lost sheep, or returning with it on his shoulders. Sometimes he figures as an ideal youth in the bloom of his years, sometimes as a bearded man in the prime of life, sometimes as Orpheus, surrounded by wild beasts enrapt by the melody of his lyre. Such pictures, however, were only *symbolical*, and did not satisfy the religious craving for a *portrait*. The age of Constantine marks the transition from the symbolical to the *pseudo-historical* picture. At this period Christ is represented in the midst of his disciples, or in the act of performing a miracle; but it is not till about the close of the 4th c. that that type of countenance is actually encountered, which, with certain modifications, continued to rule the conceptions of artists during the whole of the middle ages. To vindicate this type, myths, at a later period, sprang into existence; and we read of a portrait of C. possessed by King Abgarus of Edessa, and imprinted on a handkerchief, and of another miraculously obtained by St. Veronica at the crucifixion, but there is as little foundation for these legends as for that

which attributes to the evangelist Luke such a picture. The emperor Alexander Severus (230) is said to have possessed in his palace an image of Christ. An antique mosaic, probably of the 3d c., which exists in the *Museo Christiano* of the Vatican—where are also some specimens of the frescoes of the catacombs—gives an idea of the manner in which the heathen artists expressed their notion of Christ. He is depicted as a bearded philosopher in profile. A letter which Lentulus, the predecessor of Pilate, is declared to have written to the Roman senate, but which is evidently apocryphal, attributes to Christ a figure and countenance of manly beauty. Toward the middle of the 8th c., John of Damascus gives a description which he pretends to have gathered from more ancient authors. According to him Christ was tall, had beautiful eyes, but the eyebrows meeting; a regular nose, flowing locks, a black beard, and a sandy or straw-colored complexion, like his mother. Among the most ancient representations of Christ which profess to be portraits are the two paintings in the Calixtine and Pontine catacombs near Rome, and which are given in Arighi's *Roma Subterranea Nova.* The Savior is there represented with an oval visage, a straight nose, arched eyebrows, and high forehead. The expression is earnest and mild; the hair is parted on the forehead and falls over the shoulders in waving locks; the beard is short and scattered. These two busts agree with the apocryphal letter of Lentulus, and the artist or artists who executed them may possibly have employed it as a model. The majority of the Byzantine and Italian painters, till the time of Michael Angelo and Raphael, adhered to this type.

CHRISTCHURCH, *krīst'chêrch:* parliamentary and municipal borough and seaport on the English Channel in Hampshire, at the head of the estuary formed by the Avon and Stour, 24 m. s.w. of Southampton. Its bay has a double tide every 12 hours. C. has manufactures of fusee chains for clocks and watches, and of hosiery. It has also a salmon-fishery. It returns one member to parliament. The priory church, one of the most interesting and magnificent of English ecclesiastical structures, dates from the reign of William Rufus, and was restored, 1861. The borough comprises two favorite watering-places, Mudeford and Bournemouth. There are traces here of a Roman temple to Mars. Pop. of bor. 53,300.

CHRISTCHURCH: capital of the province of Canterbury, New Zealand, on the river Avon, about 8 m. from the sea. Its port is Littleton, with which it is connected by a railway, and it has n. and s. railway communication. It is the centre of a great grazing district, and has also flourishing manufactories. There is a large export trade, chiefly in timber and wool. The city possesses numerous fine public buildings, churches, theatre, etc. Pop. (1901) 17,538, with suburbs, 57,041.

CHRIST-CHURCH, The Cathedral of (Oxford) a great society which has had three distinct foundations. In 1526 Cardinal Wolsey obtained from Clement VII. a

bull for the suppression of 22 monasteries, the site of one of which he selected as the site of a new college, to be called Cardinal College, and which he intended to endow on a scale of magnificence beyond that of any other foundation in Oxford. On the fall of Wolsey, 1529, the whole establishment came into the hands of King Henry VIII. In 1532 that prince refounded it under the name of King Henry VIII.'s College, and in 1546 he once more re-established the college under the name of 'Christ-Church Cathedral in Oxford, or the foundation of King Henry VIII., with a dean and eight canons, 60 students, 40 schoolboys, clerks, choristers,' etc. This foundation is now subsisting, though it has undergone considerable modifications. To none of the canonries were any duties assigned by King Henry VIII. From time to time, however, the canonries have been annexed to various university professorships, more particularly one to the professorship of divinity, by King James I.; one to the professorship of Hebrew by King Charles I.; and one to the professorships of ecclesiastical history and pastoral theology, respectively, by Queen Victoria.

Several changes were introduced by the commissioners appointed under 17 and 18 Vict. c. 81. There is now only one sinecure-enjoying canon. When he is removed from the list no one may hold a canonry save a professor, the archdeacon, or the sub-dean. The studentships are now 80 in number, and are, as before, divided into junior and senior studentships, differing considerably as to emolument. All these are now open, the old system of appointment by nomination having been abolished. About three junior students are elected every year in Lent term, one in every three for excellence in mathematics or physical science; and, besides these, three are sent up yearly from Westminster. The senior studentships are also open, with the usual limitation of independent income. Of these, however, only a third can be held by laymen. The studentships were very poor; but an improvement in this respect has been included among the recent changes. Some valuable exhibitions, however, and 90 benefices, are in the gift of the society. There are annually about 1200 names on the college books. No statutes were given to C. because the death of the king took place shortly after the final foundation of the college. It was, in consequence, entirely governed by the orders of the dean and chapter, to the total exclusion of the tutors. To this separation of the governing from the teaching body, as well as to the small value of the studentships may be ascribed, in great measure, the inconsiderable degree of success in the schools, which, for many years past, brought no small discredit on this magnificent society.

CHRIST (or CRIS) CROSS ROW: the alphabet arranged in the form of a cross, for the use of children, and so printed in old 'horn' books, or primers. The letter A was at the top, and Z at the foot of the cross.

CHRISTIAN II., *kris'che-an* or *krist'yan*, King of Denmark, Norway, and Sweden: 1481, July. 2—1559, Jan. 28.

b. Vyborg, in the island of Funen. He ascended the throne of Denmark 1513. Shortly after his marriage in 1515, with a sister of the emperor Charles V., a young Norwegian peasant-girl, with whom C. was in love, died, or, as it was believed, was murdered. That natural ferocity, for which C. was surnamed the *Angry*, burst forth most furiously on this occasion. He caused the governor of the castle, Torben Oxe (see DYVEKÉ), to be beheaded. He afterward declared open war against Sweden, took Stockholm through fraud, and had himself crowned king. But the cruel vengeance and treachery of C. after this event excited the indignation of that country, which, headed by Gustavus Wasa (q.v.), succeeded in driving out the Danes, liberating itself from the yoke of the house of Kalmar, and finally electing Gustavus Wasa (1523) to the throne. In Denmark, too, the aristocracy had risen, and an insurrection in Jutland following, C. found himself forced to flee for refuge to the Netherlands; and his uncle Fredrick I. (q.v.), the introducer of the Reformation into Denmark, was elected king in his place. Encouraged, however by the Rom. Cath. party in the Netherlands, and assisted by Charles V., C. landed successfully in Norway 1531; but at the battle of Aggerhuus 1532, he was totally defeated, and made prisoner in the castle at Sonderburg, from which he was liberated after twelve years of confinement.

CHRISTIAN IV., King of Denmark and Norway, and Duke of Schleswig-Holstein: 1577, Apr. 12—1648; b. Zealand. He was elected successor to the throne 1580, and assumed the sceptre 1593. From 1610 he carried on a successful war, known as the Kalmarian war, against Charles IX of Sweden, and his successor, Gustavus Adolphus, which ended in an advantageous peace 1613. As leader of the Protestants in the thirty years' war, C. was not successful. His labors for the improvement of his country, in which he was indefatigable, were, however, most beneficial. He strengthened its maritime power; extended its commerce as far as the E. Indies, where he obtained the first possessions; and by restrictions upon the Hanse towns, greatly increased the inland trade of the country. His legislative and financial reforms, together with his love and patronage of the arts and sciences, gained for him the esteem of his people, especially of the learned.

CHRISTIAN VII., King of Denmark: 1749, Jan. 29—1808, Mar, 13; son of Fredrick V. and Louisa, of England. He succeeded to the throne of his father 1766, Jan. 14, and in the same year married Caroline Matilda, sister of George III., of England. The dissipations of his early life had enfeebled his energies, and rendered him unfit for government. The management of the state was, in consequence, seized by his ministers, with Count Bernstorff, who had possessed the entire confidence of the king's father, at their head. Bernstorff, however, was soon forced to retreat before Struensee (q.v.), who exercised unbounded influence over the king and his imprudent young queen. But innovations of a despotic tendency, and insults offered to the

national feeling, soon drew upon this minister the hatred of the nation. The queen-dowager seeing this, made it an occasion for satisfying her ambitious nature, by attaching herself to the malcontents; and in 1772 with the assistance of her son, Fredrick (1754–1805), she persuaded the vacillating king to draw up an order of arrest for Struensee and the young queen. Bernstorff was recalled from Hamburg. The king, now incapacitated by mental disease, governed only nominally. In 1784, his son Fredrick VI. (q.v.), came to the head of the government, as joint regent with the queen-mother.

CHRISTIAN VIII., King of Denmark: 1786, Sep. 18— 1848, Jan. 20 (reigned 1839–48); nephew of Christian VII. The treaty of Kiel, ceding Norway to Sweden, was repudiated by the Norwegians 1814, Jan. 28. C., then gov of Norway, offered himself as champion of independence, gathered an army of 12,000, called a diet Apr. 10, and was proclaimed king of Norway as Christian I., May 29. The allied powers supporting Bernadotte, C. gave up the crown Oct. 10, turned to study, and became pres. of the Copenhagen Acad. of Fine Arts 1832. He succeeded his cousin Fredrick VI. 1839, Dec. 3, and was crowned 1840, June 30. The liberals demanding the settlement of the Schleswig-Holstein question, he, by letter 1846, July 8, declared these provinces indissolubly united with Denmark. Complications arose, and shortly before the revolution of 1848 he died and was succeeded by his son, Fredrick VII

CHRISTIAN IX.: King of Denmark; b. 1818, April 8. On the death of Frederick VII. in 1863, he ascended the throne by virtue of a protocol made in London, 1852, which conferred the right of succession on the house of Glücksburg on the extinction of the house of Oldenburg. Soon after he succeeded to the throne, the Schleswig-Holstein trouble culminated, and he was forced into war with Prussia and Austria, because these two powers pushed troops into the disputed territory. Christian was defeated, and compelled to withdraw from Schleswig-Holstein and Lauenburg. Died, Jan. 29, 1906.

CHRISTIAN ALLIANCE: organization whose full title is 'Christian and Missionary Alliance,' and whose aim is 'a union of all evangelical denominations for fellowship, prayer, and work, in promoting the gospel of full salvation and the evangelization of the neglected classes at home and abroad. Rev. A. B. Simpson, D.D., began the movement, 1881; headquarters are on 8th ave., near 44th st., New York.

A number of branches sprang up in different parts of the country, and in 1887 the C. A. was organized at Old Orchard, Me., as the direct outgrowth. Prominent among the teachings are entire sanctification, divine healing of disease, and the personal and premillennial coming of Jesus Christ.

Thousands of dollars are subscribed toward support of foreign missions each year. The C. A. has a Missionary Institute, which has been in operation since 1883, where students are given a training for from one to three years. A new building to accommodate 250 students was

opened in 1897 at South Nyack, N. Y. The Berachah Home at the same place offers a retreat for spiritual rest and physical healing. The organ of the C. A. is the *Christian Missionary Alliance*, issued every week from Nyack, N. Y.

CHRISTIAN BURIAL: see BURIAL: FELO DE SE.

CHRISTIAN CHARITY, KNIGHTS OF THE ORDER OF, in France: founded by King Henry III. for the support of maimed officers and soldiers, who had done good service in the wars. He assigned revenues to the order, drawn from all the hospitals in the kingdom. The knights wore on the left breast an anchored cross embroidered on white taffety or satin, with a border of blue silk, and in the middle of the cross a lozenge of sky blue charged with a *fleur de lis or*. The completion of the institution was reserved for Henry IV., who placed it under the charge of the marshals and colonels of France. The order formed the germ of that noble hospital the *Invalides*, founded by Louis XIV., and model for the English hospitals of Chelsea and Greenwich. When the Invalides was founded, the order of C. C. was superseded.

CHRISTIAN COMMISSION, THE UNITED STATES: organized in New York 1861, Nov. 14. The idea was suggested by Vincent Collyer, and pushed by the Young Men's Christian Assoc. of New York, which issued, Sep. 23, a call on all similar associations in the north to unite in the work. The C. C. emulated and coöperated with the labors of the Sanitary Commission (q.v.) in ministering to the material wants of the soldiers, especially the sick and wounded, and supplemented them by giving attention to the religious needs of the troops, and assisting the efforts of the regimental chaplains. It sent forth a great number of zealous agents, received the gratuitous services of many clergymen and laymen, and accomplished much good. Its religious work aimed to be wholly unsectarian; and it aided in spreading a sentiment of Christian union among various denominations. In its physical ministrations there was some wholesome rivalry between it and the Sanitary Commission. Its *Annals* were written by Moss.

CHRISTIAN CONNECTION, THE: see CHRISTIANS, THE.

CHRIS'TIAN ENDEAV'OR, SOCIETY OF: organization to promote the Christian growth and usefulness of young people. It was originated by Francis E. Clark, D.D., and the first soc. was formed in the Williston Congl. Church (of which he was then pastor), Portland, Me., 1881, Feb. 2. It grew out of his desire for an efficient method of training a number of young converts for the privileges and responsibilities of church membership. Among the principles of the society are the following: That youth is pre-eminently the period for useful service; that, for religious efficiency, members must be organized; and that, to secure the best results, a direct obli-

gation must be imposed on each member. The requirement is made that each member shall, unless specially detained, attend and take part in each weekly prayer-meeting of the society. Each soc. is connected with a local church, with which and for which it works. Its motto is, 'For Christ and the Church.' The organization is connected with all denominations. Its expenses are met by the sale of its publications and by voluntary contributions. Its official organ is the *Golden Rule*, published at Boston. Junior Endeavor societies, with the same ends in view as the original soc., organize children between the ages of 7 and 14. At the fifteenth international convention of the societies, at Washington, D. C., 1896, July 9-13, the World's Union of Christian Endeavor was organized with Rev. Francis E. Clark, president, and Rev. W. J. L. Closs, of Australia, first secretary. In 1906 there were throughout the world 67,000 societies, with an aggregate membership of 4,000,000.

CHRISTIAN ERA: see CHRONOLOGY.

CHRISTIANIA: capital of Norway, in the province of Aggerhuus, in a beautiful open valley on the n. side of the Christiania Fiord. Christiania is the seat of the Norwegian government, the superior courts, and the *Storthing*. Besides the suburbs of Pipervigen, Hammarsborg, Vaterland, and Greenland, the town consists of Christiania, properly so called (laid out by Christian IV., 1614, in a regular parallelogram of 1,000 paces in length and breadth); the Old Town or Opslo, where the bishop resides, and the citadel Aggerhuus, from which the broad straight streets of the town can be fired upon. The most important public buildings are the royal palace, the bank and exchange, the house of representatives, or storthing, the governor's palace, and the cathedral. There is also the university, the only one in Norway, opened 1813, with a staff of 46 ordinary, and six extraordinary professors. About 1,500 students attend it annually. This institution contains, besides various scientific collections, a library of about 250,000 vols., a botanical garden, and an observatory 59° 54′ 42″ n. lat., and 10° 50′ e. long.), opened 1833. Christiania has also some good schools and learned societies, of which the 'Society for Northern Antiquities' is famous. The manufactures of Christiania are cotton, oil, paper, soap, and bricks. There are also numerous distilleries and corn-mills. It exports in considerable quantities wood, iron, anchovies, and glasswares. Over 2,000 vessels annually enter the port (which, however, is closed by ice for four months). It has regular steam-boat communication with Gottenburg, Copenhagen, Kiel, Hull, and Leith. Christiania, by means of its bay, is connected with Drammen (pop. 23,093), famous for its extensive trade in timber, etc. The scenery of the whole bay is unsurpassed in beauty. Pop. (1900) 227,626.

## CHRISTIANITY.

CHRISTIANITY, *krĭst-yăn'i-tĭ*, the religion professed by those nations of the world claiming the highest degree of civilization. The historic evidences of Christianity are limited, owing to the conditions which prevailed at the time of the advent of its Founder. It was a period of universal belief in the miraculous by all classes, and of profound ignorance among the mass of the common people. Every remarkable event was supposed to have a supernatural origin; in many instances the most natural and even trivial incidents were magnified into miracles. This state of affairs prevailed among the Greeks and Romans as well as among the Jews. Men claimed to be sons of the gods, and attributed their successes and victories to the direct interposition of divine or supernatural agencies; even the great Cæsar was not above the prevalent superstitions of his age in their bearing upon his own fortunes, as his Commentaries abundantly prove. It was nowhere regarded as an extraordinary or improbable thing that one should be raised from the dead; and yet there was but little absolute belief in the immortality of the soul. The Jews believed in a living God, the Creator of all things; but an influential sect among them rejected the doctrine of a future existence. The Greeks, besides developing the principle of the beautiful in their works of art and their spiritual idealism to a remarkable degree, thus manifesting their longings for a higher and better life, had progressed no further in their views of immortality than the deification of their heroes and heronies, with a sort of shadowy faith in a future life. The idea that all men were immortal and would live again had not yet dawned upon their mental vision. The Romans had established the principles of law and political administration, and for the greater part borrowed their gods from the nations whom they had conquered. They had likewise established an intricate system of theurgy, with its priests, its temples, and its impressive ritualism; and these were subsequently adopted in a modified form by the Christian church.

Into the midst of these scattered elements and chaotic conditions Christ came, proclaiming the Fatherhood of God, the brotherhood of man, the immortality of the soul, and future punishments and rewards for deeds done in the body. The world was ripe for this teaching, so reasonable and so consistent with the apparent order of nature, so appealing to the aspirations of humanity. He introduced the law of benevolence, with the high aim of making men pure and happy. It supplied what was lacking in the religions of the nations then in existence. Had the decadence of government and society not been past mending, Christ would have given vitality to the latent faith of Greece, mercy to the stern law of Rome, and liberty and light to the narrow theology of the Jews. By inculcating the precepts of peace and the law of universal love, He would have broadened the spirit of patriotism until it embraced all

nations. Thus the aspirations of ancient times for moral perfection might have found satisfaction in the teachings of the Nazarene, which supplied at the same time a motive for diffusing more widely that light and those advantages which mystery and the spirit of caste had formerly withheld from the multitude. Christianity, as taught by Christ, conveyed the highest ideals, the most important truths and principles, the purest laws of moral life to all ranks; it proved the possibility of lofty virtue through the example of its Founder; it laid the foundation for the peace of the world through the doctrine of the reconciliation of men with God and with each other; and, directing their minds and hearts toward Himself and the evidences of immortality which He offered, it taught them to discern the benevolent connection of the future life with the present. The history and character of Jesus afforded the materials from which the early Christians formed their conceptions of the power and tendency of their religion. This principle appears, by its effect upon the numerous nations, differing so greatly in intellectual character and cultivation, which received Christianity at first, to have been a universal truth adapted to the whole human race, and of a divine, all-uniting power. As to contributing causes, Gibbon's famous fifteenth chapter gives a fair and luminous account of the facts which, humanly speaking, 'most effectually favored and assisted' the church's rapid growth.

The first community of the followers of Jesus was formed at Jerusalem soon after the death of their Master. Another at Antioch in Syria first assumed (about 65) the name of Christians, which had originally been given to them by their adversaries as a term of reproach; and the travels of the apostles spread Christianity through the provinces of the Roman Empire. Palestine, Syria, Asia Minor, Greece, the islands of the Mediterranean, Italy, and the northern coast of Africa, as early as the first century, contained societies of Christians. Their ecclesiastical discipline was simple and conformable to their humble condition, and they continued to acquire strength amidst all kinds of oppression. At the end of the second century Christians were to be found in all the provinces, and at the end of the third almost a half of the inhabitants of the Roman Empire, and of several neighboring countries, professed this belief.

From the first council of the Church held in Jerusalem, before the apostles dispersed to teach all nations, the followers of Christ strove to keep united, to preserve the faith and discipline left them by their Founder. When any person or persons of influence advanced a teaching which seemed to Christians out of harmony with the faith as given to them by Christ, it was customary to call together the bishops, as at Jerusalem, and discuss the disputed questions, in order to learn

by traditional and historical evidence the truth. Such meetings or assemblies when called by the Bishop of Rome were known as General Councils, but if by any other bishop they were called provincial councils. Certain scholarly men who were zealous in the cause gathered together the authoritative teachings and generally accepted traditions of the times, and thus left on record the history of the first years of Christianity from theological and dogmatic points of view. These men are styled fathers or doctors of the Church. The teachings of the councils and the fathers were potent factors in fostering unity among Christians. Those who did not accept the teachings of the councils were called heretics. Jeremy Taylor found the essence of heresy to be self-will rather than erroneous opinions. The word at first meant separation or sect; men might part from the Church, as in the great Donatist schism, on other than doctrinal grounds.

Christianity was introduced among the Goths in the 4th century, and, spreading among the other Teutonic nations in the west and north of Europe, subjected to its influence during the 7th and 8th centuries the rude warriors who founded new kingdoms on the ruins of the Western empire. Meanwhile it was losing ground in Asia and Africa before the encroachments of the Saracens, by whose rigorous measures hundreds of thousands of Christians were forced into Mohammedanism, the heretical sects which had been disowned by the orthodox Church including almost the only Christians who maintained themselves in the East.

During the progress of Mohammedanism, which, in Europe, originally extended only to Spain and Sicily, the Roman popes, who were advancing systematically to full ecclesiastical superiority in the west of Europe, gained more in the north, and soon after, in the east of this quarter of the world, by the conversion of the Slavonic and Scandinavian nations (from the 10th to the 12th century), than they had lost in other regions. For the Mohammedans had chiefly overrun the territory of the Eastern Church, which had been since the 5th century no longer one with the Western (Latin) Church, and had by degrees become entirely separate from it. In the 10th century it received some new adherents by the conversion of the Russians, who are now its most powerful support. But the Crusaders, who were led partly by religious enthusiasm, partly by the desire of conquest and adventure, to attempt the recovery of the holy sepulchre, gained the new kingdom of Jerusalem, not for the Greek emperor, but for themselves and the papal hierarchy. The confusion which this finally unsuccessful attempt against the infidels introduced into the civil and domestic affairs of the western nations gave the Church a favorable opportunity of increasing its possessions and asserting its claims to universal sovereignty. But, contrary to the wishes and expecta-

tions of the rulers of the Church, the remains of ancient heresies were introduced into the West through the increased intercourse of nations and by the returning Crusaders, and new ideas of another sort were also propagated, springing from the philosophical spirit of examination displayed by some of the schoolmen.

Wickliff in England and Huss in Bohemia began attacks on the popes and bishops because of abuses which had crept into the Church. Their action led to a revolt against ecclesiastical authority which resulted in many leaving the Roman Catholic Church. In regard to the movement that took place in the next century, and in which Luther was the great actor, we refer the reader to the article REFORMATION, and the articles relating to it. The Reformation is naturally regarded with widely different sentiments by Protestants and Roman Catholics. But that this great change in the Church has restored Christianity to its original simplicity and purity the most Zealous Protestant will not assert, any more than the reflecting Catholic will deny the necessity that then existed for some reform—a necessity which indeed resulted in the holding of the Council of Trent. On this subject a Roman Catholic writer remarks that 'The true and Catholic Reformation, long desired, but delayed by many difficulties, was taken up and successfully accomplished by the Council of Trent (1545–63).'

From a Protestant viewpoint the development of doctrine is the most interesting phase of theological history. This has gone on from the beginning, slowly and doubtfully for centuries, and with increasing rapidity since the revival of learning and of human intelligence and conscience; as the pastor of the Plymouth pilgrims believed, 'the Lord had yet more light and truth to break forth from His Word." Of late this evolution has been more powerfully influenced by the general progress of science, and its mental effects may be not less important than the material alleviations of life brought in by enlarged technical knowledge. The warfare between 'religious' and 'secular' truth is not so violent as of old; there is less bigotry abroad and more toleration; more deference is paid to reason and less to tradition; the tendency is to emphasize the moral and spiritual, rather than the dogmatic, aspects of religion; to regard Christianity as a producer of character, much more than as a set of fixed opinions; to care more for the ideal and spirit of the Master than for what men have thought about Him. Some steps have been taken toward a general realization (west of Russia or Turkey) of the noble maxim of a Cambridge Platonist: 'Christ is not so little as a name or notion: He is a nature, and spirit, and life in us.'

CHRISTIAN KNOWLEDGE, SOCIETY FOR PROMOT-

ING: oldest of the great religious associations connected with the Church of England. It was founded 1698, though it did not receive its present name till 1701; and had for its object: '1. To promote and encourage the erecting of charity schools in all parts of England and Wales. 2. To disperse, both at home and abroad, Bibles and tracts of religion; and, in general, to advance the honor of God, and the good of mankind, by promoting Christian knowledge, both at home and in other parts of the world, by the best methods that should offer.' These objects it has never ceased to pursue, directing its efforts chiefly to the British dominions; partaking at once of the nature of an educational association, a missionary soc., a Bible soc., and a religious tract soc; and notwithstanding the operations of other great societies in these several departments of Christian benevolence, its revenue amounts to about £100,000 a year. The Protestant missionaries who labored in the s. of India in last century were supported chiefly by this society, which has also established many Christian schools.

CHRISTIAN MISSIONARY ALLIANCE: The Christian Missionary Alliance was the title adopted when the Christian Alliance, which had been founded in 1887, and the International Missionary Alliance combined in 1897. All who have made open profession of belief in Christ may become members by subscribing to the principles of the order and enrolling their names. The objects of the Alliance are 'Wide diffusion of the Gospel in its fulness, the promotion of a deeper and higher Christian life and the work of evangelization, especially among the neglected classes in distant and especially heathen countries.' Connected with the Alliance are the Missionary Training Institute, Institute for the Training of Home Workers, Berachah Home and Berachah Orphanage.

CHRISTIAN REFORMED CHURCH IN NORTH AMERICA, THE: This Church is largely the result of three secession movements out of the Reformed (Dutch) Church (q.v.). The first of these movements took place in 1822 in the States of New Jersey and New York. Its leader was Rev. Solomon Froeligh, D.D., assistant professor of theology in the Dutch Church. The reasons advanced for seceding from the old denomination were: its laxness in disciplining offending members, indiscriminate administration of sealing ordinances, and toleration of Hopkinsian teachings. In 1827 the seceders, calling themselves the 'True Reformed Dutch Church,' numbered 25 congregations and 12 ministers. Their number dwindled slowly but surely until 1890, when they formed a union with the main part of the present Christian Reformed Church.

This main part was composed largely of Hollanders who, in 1847, and the decade following, had settled in Michigan, Wisconsin, Iowa, and other northwestern States. In 1849 these people—all staunch Calvinists—had united themselves with the (Dutch) Reformed Church. From the

very beginning, however, some were dissatisfied with the union on account of difference in language, neglect of catechetical preaching and teaching, too much fraternizing with un-Calvinistic denominations, the singing of hymns, and laxity of doctrine. Objections were also made against allowing freemasons to be church members. In 1857 this dissatisfaction led to an open disruption. Under the leadership of the Rev. K. Vanden Bosch, about half a dozen churches in Michigan withdrew and styled themselves the 'True Dutch Reformed Church.' In 1876 they opened a theological school in Grand Rapids, Mich., the denominational stronghold.

This True Dutch Reformed Church was much strengthened, numerically and morally, by a third movement of secession which took place in the early '80's. This movement was the result of anti-Masonic agitation, the General Synod of the Reformed Church refusing to take such decided action as the complainants desired. In 1882 the seceding congregations, about half a dozen, led by Rev. L. J. Hulst, united formally with the Church which had withdrawn in 1857.

After this union the numerical increase of the denomination, which was slow at first, became quite rapid. The statistics for 1905 give 164 congregations, 119 ministers, 594 elders, 548 deacons, 12,209 families, 21,817 communicants, 21,229 catechism scholars, 16,309 Sabbath-school scholars; a total of 62,836 souls. These congregations are located in 18 States, from the Atlantic to the Pacific, from Canada to the Gulf of Mexico. The different local churches are joined in 10 'classes' or presbyteries. Six delegates of each of the latter, three ministers and three elders, constitute the Synod, the highest Church court of the denomination, meeting biennially (in even years), the third Wednesday in June. The theological school, including both a literary and a theological department, numbers about 150 students. The faculty is composed of 10 professors.

The denomination also carries on mission work among the Navaho and Zuni Indians in New Mexico. Near Gallup, N. M., 'Rehoboth Mission,' a promising boarding school for Navaho children, has been opened. Something is also done for Jewish missions. Four periodicals are issued in the interests of the denomination: one weekly, two monthlies, and one bi-weekly, the latter in English, 'The Banner of Truth,' published in Holland, Mich. Most of the Christian Reformed congregations are as yet using the Holland language in their religious exercises. Half a dozen conduct their worship in German, 18 are English-speaking churches, and the near future promises many more as a result of Americanizing forces. Fraternal relations are established with the stricter Calvinistic Churches of the United States and South Africa, and especially with the Reformed Churches of Holland. In creed and government the Christian Reformed Church is like all reformed denominations of Holland origin throughout the world.

CHRISTIANS, The: religious denomination called sometimes Christian Connection (distinct from the *Disciples of Christ*, also sometimes called *Christians*). They repudiate as a nickname the pronunciation with *i* long, *Christ-ians*. The body had its origin in three secessions. (1) James O'Kelly and others left the Methodists in N. C., 1793, and at first were called 'Republican Methodists,' but at a conference in Surry co., Va., 1794, Aug. 4, organized as 'Christians.' (2) Abner Jones, of Harkand, Vt., established, 1800, at Lyndon, Vt., a society which disavowed sectarianism and human creeds. He was joined by Elias Smith and other Baptists, and many churches were formed in New England within the next four years. These two compiled *Hymns, Original and Selected, for the Use of Christians* (1805–10), and E. Smith conducted the *Christian's Magazine*, a quarterly, 1805–07, and began, 1808, Sep. 1, *The Herald of Gospel Liberty*, which is claimed (though the claim is disputed) to be the earliest religious newspaper, preceding by eight years the Boston *Recorder*, and by five the Philadelphia *Remembrancer*. (3) Baron W. Stone, David Purviance, and other Presbyterians in Ky. and Tenn., withdrew, 1801, from the synod of Ky., organized the Springfield presbytery, and announced their principles, 1804, June 28. These three bodies, having the same ideas and aims, were soon consolidated under a congregational government, with a general convention, meeting quadrennially.

The views of the C. are thus expressed by themselves: 'They seek to unite the followers of Christ of every persuasion, by breaking down party walls, party spirit, and sectarian feeling and practice, and by infusing into the minds and hearts of all lovers of the Redeemer a liberal spirit, thereby inducing liberal practice. They admonish their brethren to beware of atheists, deists, agnostics, humanitarians, spiritualists, universalists, etc. Their watchword has always been, "Let the brethren of the Christian Church beware!" They have no rule of faith but the Holy Scriptures, and the only test of fellowship agreed upon is Christian character. They believe that the right of private judgment and liberty of conscience in reference to those points of doctrine and practice not considered essential to salvation should be accorded and enjoyed by all; and that therefore all who believe in and love and serve the Lord Jesus Christ ought to be received into the fellowship and communion of the church. They discard the use of such words as "Trinity," "Three Persons in One," in reference to the Father, Son, and Holy Spirit, as illogical and misleading, and prefer to use Bible terms instead. They advocate immersion as the proper mode of baptism, but will not refuse an infusionist membership. They believe in the future reward of the righteous and punishment of the wicked. They hold that the fall of our first parents in Eden involved not only the actual transgressors, but their posterity, in that they are born in exile from God, i.e., the children of sinful parents; but the church does not teach total depravity, nor that any are damned on account

of original sin. They do not believe that God elects some, and condemns the rest of mankind; a child may have a sinful heritage, but is not an actual sinner before arriving at the age of accountability. They hold that the Scriptures are inspired and of divine authority; that every man has a right to interpret them for himself; that differences of theological views are not a bar to church fellowship; that there is one God, and that Christ is His divine Son, who pre-existed before He came to earth, and is the Mediator between God and man, and that His sufferings atone for the sins of all men, who by repentance and faith may be saved; that immersion is the only proper form of baptism, and believers the only proper subjects for that ordinance; that communion at the Lord's table is open to believers of all denominations; that the Holy Ghost is the Spirit of God—that it bears a like relation to God as the spirit of man does to man. Although they have a decided opinion of the Father, Son, and Holy Spirit, they seek to know no more than what is written in the language of the Holy Scriptures. In their early history they were often misrepresented, but are now regarded as orthodox. They put much stress on the punishment that awaits those who add unto God's word or take therefrom.

There is an element in the church which does not agree to this view in full. They hold to the Divinity of Christ, but deny that he is equal with the Father; they reject the vicarious atonement, but believe that the atonement is the reconciliation of the sinner to God through the death of his Son. 'By his stripes we are healed, that is, reconciled—atoned.' They hold that the death of Christ was not to make judicial satisfaction, but to secure the sinner's salvation and a ratification of the New Covenant, that it is moral in its nature, rather than propitiatory. This wing of the church denies the personality of the Holy Spirit, teaching that he is an influence proceeding from the Father and the Son for the convincing of the world of sin, of righteousness and of judgment. They as much depend upon the presence and power of the Holy Spirit to make their labors effective as do their brethren who accept his personality. The Spirit is thus honored in their lives and service.

This definition of their doctrines, though evangelical, does not present a definite assertion of a strictly Trinitarian theology. Within the present century the emphasis formerly laid on theological accuracy has indeed been somewhat modified, partly perhaps by the influence of this body; but, in the general acceptation of the term, Trinitarian doctrine is still a component part of 'orthodoxy.

The slavery trouble disturbed the connection of the southern with the northern conferences, and the former organized, 1856, a Southern general convention, which still exists, though the whole body is united in an American general convention, which, by its constitution, regulates financial business, the election of officers, and several departments. A publishing house at Dayton, O., issues

books, tracts, and the old *Herald of Gospel Liberty*, which is the denominational organ, and was long ago united with the Dayton *Gospel Herald*. The *Christian Sun*, published formerly at Suffolk, Va., is now conducted at Eton College, N. C. They also publish *The Christian Messenger* at New Bedford, Mass.; *The Christian Vanguard* at Kingston, Ontario, Canada; *The Christian Missionary* at Dayton, Ohio; *The Christian Messenger* in Japan; and a number of smaller periodicals and books. The body controls the following institutions of learning: Starkey College, founded 1842, at Eddytown, Yates co., N. Y.; Antioch College, Yellow Springs, O., 1852; Graham College, N. C., 1852; Union Christian College, Merom, Ind., 1859; Lincoln College, Kan., 1885; Suffolk Collegiate Institute, Va., 1872; Christian Biblical Institute, Eddytown, N. Y., 1869; Weaubleau Institute, Mo., 1872; Literary and Theol. Institute (for persons of color), Franklinton, N. C., 1880; Le Grand Christian Institute, Iowa, 1865; and Windsor High School, Va., 1885. Camp Christian, Craigville, Mass., is a seaside resort, under a charter; it has a large tabernacle and about 100 cottages.

True to their principles, the Christians have made efforts toward organic union with affiliated bodies. The Disciples of Christ (q.v.), who also have claimed the name 'Christian,' are a much stronger body, with over 500,000 members and some 50 universities, colleges, and seminaries; though agreeing with the Christians in most matters they are not so liberal, admitting no baptism but by immersion, and this difference prevented a union. Several conferences were held, 1886, with the Free Will Baptists, but to no definite result. A council held 1886, May, with the Union Christian Church was more successful, and a confederation was formed between the two. This body, organized at Columbus, O., 1865, has some 50,000 communicants, two organs (the *Christian Witness*, edited at Newark, O., and the *Sentinel of Truth*, Excelsior Springs, Mo., and Humboldt College, Iowa, founded by S. Taft, but now carried on as a seminary.—The Christians have made considerable gains in the last few years. They now have 72 annual conferences, with 1,500 ministers, over 1,600 congregations, and about 125,000 communicant members. The value of their church property is estimated at about $3,500,000. Besides home missions, and the work of church extension, they support foreign missions in Japan and Porto Rico. Among their most eminent clergy of the past, besides the founders above mentioned, were Wm. Kinkade, Prof. David Millard, Dr. W. B. Wellons, J. N. Manning, F. A. Plummer, Jos. Badger, Jabez Chadwick, S. Clough, Prof. E. W. Humphreys, Dr. A. Craig, J. N. Spoor, and J. G. Wilson.

CHRISTIANSAND, *krĭs'tē-ân-sând:* principal town of the province or *stift* of that name in Norway; at the mouth of Torridalself, in the bay of Christiansand. Christiansand is the residence of a bishop and high-bailiff or stiftamtmand and has a branch of the Norwegian Bank, a

gymnasium, and several charitable foundations. The streets are wide, straight, and regular; the houses are built of wood and detached, presenting altogether a remarkable colonial appearance. The manufactures are leather, tobacco, cotton, etc. Ship-building forms also a considerable branch of industry. The town, built 1641, by Christian IV., has an excellent harbor, divided into two parts by the island of Oddern. A destructive fire took place here 1880. Christiansand exports wood, lobsters, and salmon in large quantities. The town and harbor are protected by several fortifications. The fortifications, however, have been rendered practically useless by the erection of a fortress at Flekkerö, five miles distant. There is regular communication by steamer with the rest of Norway, and with Germany, England, and Denmark. Pop. (1900) 14,666.

CHRISTIAN SCIENCE: Christian Science was discovered in 1866 by Mrs. Mary Baker G. Eddy. In 1867 she began the first school of Christian Science mind-healing in Lynn, Mass. As early as 1862 she had written and given to friends certain conclusions derived from her study of the Scriptures, and in 1870 she copyrighted her first pamphlet on Christian Science which did not, however, appear in print until 1876. It was in 1875 that Mrs. Eddy published the Christian Science text-book, *Science and Health with Key to the Scriptures.* In 1879 the 'Church of Christ, Scientist,' was organized and chartered by students of Mrs. Eddy, and in 1881 she accepted the call to become their pastor. A reorganization of this church took place in 1892 under the name of The First Church of Christ, Scientist. In 1881 Mrs. Eddy opened the Massachusetts Metaphysical College in Boston under a charter from the Commonwealth, in which institution over four thousand students were taught by her during seven years. Mrs. Eddy has since founded or instituted every department of the work of the Christian Science denomination, such as its publications, reading rooms, board of lectureship and committee on publication. A church edifice for The First Church of Christ, Scientist, The Mother Church, was erected in 1894, and a new church adjoining the original edifice, seating nearly 5,000 people, was built in 1904, costing over $2,000,000.

The teachings of Christian Science have been authoritatively set forth by Mrs. Eddy in *Science and Health with Key to the Scriptures.* She gives the Principle and rule in this work whereby the sick may be healed as well as the sinner saved, and teaches the necessity of a practical Christianity reviving the apostolic healing which Jesus enjoined. The denomination has no creed, but its religious tenets, contained in its text-book, are as follows:

1. As adherents of Truth, we take the inspired Word of the Bible as our sufficient guide to eternal Life.

2. We acknowledge and adore one supreme and infinite God. We acknowledge His Son, one Christ; the Holy

Ghost or divine Comforter; and man in God's image and likeness.

3. We acknowledge God's forgiveness of sin in the destruction of sin and the spiritual understanding that evil is unreal, hence not eternal. But the belief in sin is punished so long as the belief lasts.

4. We acknowledge Jesus' atonement as the evidence of divine, efficacious Love, unfolding man's unity with God through Christ Jesus, the Wayshower; and we acknowledge that man is saved through Christ, through Truth, Life, and Love as demonstrated by the Galilean Prophet in healing the sick and overcoming sin and death.

5. We acknowledge that the crucifixion of Jesus and his resurrection served to uplift faith and understanding to perceive eternal Life, even the allness of Spirit and the nothingness of matter.

6. And we solemnly promise to strive, watch, and pray for that Mind to be in us which was also in Christ Jesus; to love one another; and to be meek, merciful, just, and pure.

A brief summary, known as the scientific statement of being, likewise contained in *Science and Health with Key to the Scriptures*, is as follows:

'There is no life, truth, intelligence, nor substance in matter. All is infinite Mind and its infinite manifestation, for God is All-in-all. Spirit is immortal Truth; matter is mortal error. Spirit is the real and eternal; matter is the unreal and temporal. Spirit is God, and man is His image and likeness. Therefore man is not material; he is spiritual.'

The Bible and *Science and Health with Key to the Scriptures* have been ordained Pastor of The First Church of Christ, Scientist, in Boston, Mass., the 'Mother Church' of the denomination. The officers of this church consist of the Rev. Mary Baker G. Eddy as pastor emeritus, a Christian Science board of directors of five members, a president, the first and second readers, a clerk and a treasurer. In 1907 there were 702 branch Churches of Christ, Scientist, in various parts of the world. An identical weekly lesson-sermon, prepared by a committee connected with The Mother Church, is read in all these churches at the Sunday services. There are two readers who read alternately, the second reader from the Bible and the first reader from *Science and Health with Key to the Scriptures*. A Wednesday evening meeting, led by the First Reader, is likewise held in each Church of Christ, Scientist. At these meetings those who have been healed and reformed by Christian Science are privileged to bear grateful testimony. Beside the branch churches there were, in 1907, 294 Christian Science Societies not yet organized as churches. Each branch church has its own form of government, its own rules and by-laws, and manages its own financial affairs.

The principal work of the Christian Science denomination, as a whole, and of its individual members as such, is

summed up in the word 'healing.' By this is meant the mental, moral and physical regeneration of mankind. There are several thousand regular practitioners of Christian Science to be found here and abroad. Furthermore, all the departments of the denomination contribute to this curative work, directly or indirectly.

The general results of this work have been that a vast number of persons of both sexes, and of every age have been benefited in mind and body, many have been healed of diseases pronounced as incurable by skilled physicians, others have been rescued from bad habits which would yield to no other treatment, while the general efficiency of persons treated by Christian Science, as regards orderly living and general usefulness, has been enhanced.

The educational needs of the denomination are served by The Massachusetts Metaphysical College in Boston, and by numerous duly authorized teachers of Christian Science to be found in different parts of the world. Free lectures on Christian Science are also given frequently by members of the board of lectureship under the auspices of local Churches of Christ, Scientist. Sunday schools are also attached to the various churches. The work of the committee on publication has for its object to correct mistakes concerning Christian Science which may appear in the press and periodicals. It has representatives in the various states, provinces, or counties, and is educational in its purpose and effect.

The various churches of Christ, Scientists, maintain free reading rooms in the towns and cities where they are located. In these rooms the Bible, the writings of Mrs. Eddy, and the publications of the Christian Science Publishing Society may be read free of charge.

The denomination, through the Christian Science Publishing Society, issues the monthly, *The Christian Science Journal*, the weekly *Christian Science Sentinel*, the *Christian Science Quarterly*, containing the Lesson-Sermons, and a German monthly publication, *Der Herold der Christian Science*. Besides this books and pamphlets are also printed by the Society.

CHRISTIANSEN, *krĭs'tē-ăn-sĕn*, Arne Einar, Danish dramatist: b. 1861. His first play, *Lindow's Bairns*, was a prose comedy and was first produced in 1881. He then travelled for several years in various European countries and in the Orient. Upon his return he produced the tragedy *Nero* (1885), and has since written many prose dramas and several historical plays in verse.

CHRISTIANSFELD, *krĭs'tē-ânz-fĕld:* settlement of Moravian brothers, in the n. part of Schleswig; founded 1772. It consists of 64 houses and about 700 inhabitants. The houses, well built, and cheerful in appearance, are arranged in parallel streets, with the church upon a green plot in the middle. The settlement is represented by the inspectors or chiefs appointed by the directors of the fraternity; and the representatives elected by the members of

the sect. The manufactures are linen, soap, cotton, leather, etc.

CHRISTIANS OF ST. JOHN, or Nazare'ans: a strange sect found in Persia, chiefly near Bassorah. They are Christian only in name, but claim to follow John the Baptist, to have originated on the Jordan in his time, and to have been driven by the Mohammedans from Palestine to Persia and India. To avoid persecution they joined the Nestorians, but left that sect in the 16th century. Neander interpreted their other names, Mendæans and Sabæans, to mean disciples and baptizers, and supposed them sprung from those followers of St. John Baptist who opposed themselves to Christianity. Their doctrines show abundant traces of Gnostic, if not of Manichean, influence. The original Deity, Ferha, lives with a female principle, Ajar, in remote splendor. Beneath him are kingdoms of light and darkness, between which is continual conflict, mostly to the advantage of darkness. Seven dark angels, inhabiting the seven planets, made the world. Jehovah, Jesus, and their respective scriptures, belong to the kingdom of darkness, but John Baptist (who had a wife and children) represents light, and baptism is the only way to light, the door of forgiveness and redemption. This sect has four doctrinal books and one astrological. It prohibits mourning for the dead, allows polygamy to priests and people, but forbids sensual indulgences, and even singing and dancing, by the elect, or by those who have reached the higher life. The C. observe a sort of love-feast, and abhor anything blue. When discovered by the missionaries in Persia, about 1650, they numbered some 100,000.

CHRISTIANS OF ST. THOMAS: an ancient body, still existing along the coast of Malabar in s.w. Hindostan. They claim to have been established by the apostle Thomas, who carried his labors to that region, but are probably a branch of the Syro-Persian Church, founded 499 by Nestorians excommunicated for adhering to the Monophysite heresy. Under the Portuguese rule they submitted, 1599, to the Church of Rome, and their books were burned by order of the synod of Diamper. Later, many of them resumed their independence; these numbered 70,000 in 1859, and claimed, 1869, to have 190,000 members. They retain some primitive customs, as the agapæ or love-feasts; they use bread, salt, and oil in the communion, and anoint infants with oil in baptism; their priests shave the head, and are permitted to marry. They use the Syriac rite, and are subject to the Jacobite patriarch of Antioch. Once the leading class in Malabar, they are said to be now much debased, and are most numerous at Travancore.

CHRISTIANSTAD, *kris'tē-ân-stâd:* strongly fortified cap. of a province of the same name in the s. of Sweden. It is on the Helge, about 9 m. from the Baltic, and 265 s.w. of Stockholm. C. is the residence of a governor, and the seat of a court of justice. It is a beautifully-built town, and possesses an arsenal, a school, a magnificent

church, and a senate-house. The people are employed chiefly in the manufacture of woolen goods, leather, gloves, etc. There is also some trade in wood, pitch, potash, etc. The town, founded by Christian IV., has suffered many sieges. Pop. (1880) 9,203; (1901) 10,446.

The province of Christianstad has 2,507 sq. m. Pop. (1880) 230,619; (1890) 221,697; (1901) 219,459.

CHRISTIANSTED, *krĭs'tē-ân-stĕd:* the chief town of the Danish island of St. Croix, in the West Indies. It stands on the n.e. coast of the island, and has an excellent harbor, which is defended by a fort and a battery. Here resides the governor-general of the Danish West Indies. The number of its inhabitants is 5,700.

CHRISTIANSUND, *kris'tē-ân-sônd:* seaport on the w. coast of Norway, 85 m. w.s.w. of Trondhjem; lat. 63° 3′ n.; long. 7° 40′ e. It was founded 1734 by Christian VI. of Denmark, and at first was called Lille-Fosen. It is built on three small islands, which inclose a nearly circular harbor; and exports wood and fish, chiefly salt cod, to Spain, the Mediterranean, and the West Indies. Pop. (1900) 12,050.

CHRISTIAN UNION CHURCHES: see UNION CHRISTIAN CHURCHES.

CHRISTINA, *krĭs-tē'nâ,* Queen of Sweden: 1626, Dec. —1689, Apr. 19, only child of the great Gustavus Adolphus. She succeeded her father 1632, when only six years old. Distinguished equally by beauty and the possession of a lively imagination, a good memory and uncommon intelligence, she received the education rather of a man than of a woman; and to this may in part be attributed the many eccentricities of her life. During her minority, the kingdom was governed by the five highest officers of the state, the principal being Chancellor Oxenstiern. In 1644, she assumed the reins of power, and, 1650, was crowned with the title of *king.* She had previously declared her cousin, Charles Gustavus, her successor. For four years thereafter, she ruled the kingdom with vigor, and was remarkable for her patronage of learned and scientific men. In 1654, however, at the age of 28, weary of the personal restraint which royalty imposed on her, she abdicated in favor of her cousin, reserving to herself sufficient revenues, entire independence, and supreme authority over her suite and household. Leaving Sweden, she proceeded to Brussels, where she embraced the Rom. Cath. faith. She afterward went to Rome, which she entered on horseback, in the costume of an Amazon, with great pomp. Confirmed by Pope Alexander VII., she adopted the surname of Alessandra. In 1656, she visited Paris; and the following year, on a second residence there, she caused her grand equerry, Monaldeschi, who had enjoyed her entire confidence, to be executed in her own household for treason. In 1658 she returned to Rome, and, 1660, the death of the king, her cousin, caused her to hasten to Sweden; but, failing in her attempt to be reinstated on the throne, she again left the country. In 1666, she aspired to the

crown of Poland, but was unnoticed by the Poles. The remainder of her life was spent in Rome in artistic and scientific pursuits. Besides founding an academy, she collected valuable MSS., medals, and paintings. Much of her conduct indicates that at times she was scarcely sane.

CHRISTINA: Queen of Spain: see MARIA CHRISTINA.

CHRISTISON, *krĭs'tĭ-son*, Sir ROBERT, D.C.L.: physician: 1797, July 18—1882, Jan. 27; b. Edinburgh; son of Alexander Christison, prof. of humanity in the Univ. of Edinburgh. He was educated at the high school, and 1811, became a student at the univ. After graduating 1819, he went to London and Paris; and, in the French capital, studied toxicology under the celebrated Orfila, a department of medical science in which in Britain his name has become eminent. Commencing the practice of medicine at Edinburgh, he was, 1822, appointed prof. of medical jurisprudence in the univ. of that city, and, 1832, was promoted to the chair of materia medica. Besides contributing papers on various subjects to medical journals, C. is author of a *Treatise on Poisons*, published 1829, a standard work; *Biographical Sketch of Edward Turner, M.D.* (1837), being an address delivered before the Harveian Soc. of Edinburgh; a treatise *On Granular Degeneration of the Kidneys* (1839); and *The Dispensatory, a Commentary on the Pharmacopœias of Great Britain* (1842). Twice pres. of the Royal College of Physicians, Edinburgh, and ordinary physician to the queen in Scotland, in 1871 he was created a baronet. In 1877, Sir Robert retired from professorial and other public work.

CHRISTMAS, *krĭs'măs* [*Christ*, and *mass:* OE. *Cristemasse*]: the day on which the nativity of the Savior is observed—assigned to Dec. 25. The institution of this festival is attributed by the spurious Decretals to Telesphorus, in the reign of Antoninus Pius (A.D. 138–161), but the first certain traces of it are found about the time of the Emperor Commodus (180–192). In the reign of Diocletian (284–305), while that ruler was keeping court at Nicomedia, he learned that a multitude of Christians were assembled in the city to celebrate the birthday of Jesus, and having ordered the church-doors to be closed, he set fire to the building, and all the worshippers perished in the flames. It does not appear, however, that there was any uniformity in the period of observing the nativity among the early churches; some held the festival in May or Apr., others in Jan. There is no reason to suppose that Dec. 25 was the day of Christ's nativity; indeed, it is not evident that it could have been; for it is then the height of the rainy season in Judea, when shepherds could hardly have been watching their flocks by night in the plains.

C. not only became the parent of many later festivals, such as those of the Virgin, but, especially from the 5th to the 8th c., gathered round it several other festivals, partly old and partly new, so that what may be termed a *Christmas Cycle* sprang up, which surpassed all other groups of Christian holidays in the manifold richness of its festal

usages, and furthered, more than any other, the completion of the orderly and systematic distribution of church festivals over the whole year. Not casually or arbitrarily was the festival of the nativity celebrated on Dec. 25. Among the causes that co-operated in fixing this period as the proper one, perhaps the most powerful was, that almost all the heathen nations regarded the winter-solstice, which occurs at about this time, as a most important point of the year, as the beginning of the renewed life and activity of the powers of nature, and of the gods, who were originally merely the symbolical personifications of these powers. In more northerly countries, this fact must have made itself peculiarly palpable—hence the Celts and Germans, from the oldest times, celebrated the season with the greatest festivities. At the winter-solstice, the Germans held their great Yule-feast (see YULE), in commemoration of the return of the fiery sun-wheel; and believed that during the 12 nights from Dec. 25 to Jan. 6, they could trace the personal movements and interferences on earth of their great deities, Odin, Berchta, etc. Many of the beliefs and usages of the old Germans, and of the Romans, relating to this matter, passed over from heathenism into Christianity, and have partly survived to the present day. But the church also sought to combat and banish—and it was to a large extent successful—the deep-rooted heathen feeling, by aiding—for the purification of the heathen customs and feasts which it retained—its grandly devised liturgy, besides dramatic representations of the birth of Christ and the first events of his life. Hence sprang the so-called 'Manger-songs,' and a multitude of C. carols, as well as C. dramas, which, at certain times and places, degenerated into farces or Fools' Feasts (q.v.). Hence also originated, at a later period, the Christ-trees, or C.-trees, adorned with lights and gifts, the custom of reciprocal presents, and of special C. meats and dishes, such as C. cakes, dumplings, etc. In recent years, it has become usual for friends to forward to one another, by post, gayly-illuminated Christmas-cards, bearing Christmas greetings, though this custom seems now on the wane.

In the Rom. Cath. Church, three masses are performed at C.—one at midnight, one at daybreak, and one in the morning. The day is celebrated also by the Anglo-Cath. Church and the Prot. Episc. Church in the United States—special psalms are sung, a special preface is made in the communion service, and (in the English Church) the Athanasian creed is said or sung. The Lutheran Church, on the European continent, and in America, likewise observes C.; but the Presbyterian Churches in Scotland, and large portions of the English dissenters, reject it, in its religious aspect, as a 'human invention,' and as 'savoring of papistical will-worship;' although, in England, dissenters as well as churchmen use it as a social holiday, on which there is cessation from all business. Its religious observance, however, is manifestly growing in favor in recent years among all non-prelatical denominations, both in England and in the United States. Its suggestions of the

Son of God as a little child are so sweet and tender, that it has commended itself as a children's day, and therefore a family day, and thence as a day within the cognizance of the church for spiritual uses. But within the last hundred years, the festivities often degenerating into wild revel, once customary at what is known as the C. season, (Dec. 25—Jan. 6), have much fallen off. These at one time lasted with more or less brilliancy till Candlemas, and with great spirit till Twelfth-day; but now a meeting in the evening, composed, when possible, of the various branches and members of a family, is the chief social and festal distinction of the day.

CHRISTMAS-BOX: box holding a small money-gift to persons in an inferior condition, presented on the day after Christmas, which is hence popularly called *boxing-day*. The term, and also the custom, are essentially English, though the making of presents at this season and at the new year is of great antiquity. Interesting particulars concerning the C. B. are given in Brand's *Popular Antiquities*. Within the memory of middle-aged persons, the practice of giving Christmas boxes, or petty presents, to apprentices, domestic servants, and tradesmen, had become a serious social nuisance, particularly in London, where every old custom seems to linger and is most difficult to be set aside. Householders felt under an obligation to give money to the apprentices in the shops where they dealt; also to various inferior parish officers, including scavengers and lamplighters; while shopkeepers, on the other hand, were equally impelled to make presents to the male and female servants of their customers. Thus, as referred to in *Christmas*, a poem:

> 'Gladly, the boy, with Christmas-box in hand,
> Throughout the town his devious route pursues;
> And, of his master's customers, implores
> The yearly mite: often his cash he shakes;
> The which, perchance, of coppers few consists,
> Whose dulcet jingle fills his little soul
> With joy.'

At length the C.-B. system became such an intolerable grievance, that tradesmen stuck up notices in their windows that no Christmas-boxes would be given; and at the same time the public authorities issued remonstrances to the same effect. At Christmas 1836, the secretary of state for foreign affairs issued a circular to the different embassies requesting a discontinuance of the customary gifts to the messengers of the foreign department, and other government servants, and the practice has since greatly decreased.

CHRISTMAS CAROLS: quaint, grotesque, popular ditties, or more dignified songs of Christian joy customarily sung at Christmas time. The word carol [It. *carola*, and Fr. *carole*, a round dance—probably from Lat. *corolla*; Welsh, *coroli*, to reel, to dance; the name is thence applied to the music or song accompanying such a dance: *carillon* is probably allied] signifies a song of joy. The practice of singing carols, or, at all events, sacred music, in celebration of the nativity of Christ as early as the second c., is con-

sidered as proved by the fact that a large sarcophagus belonging to that period has sculptured upon it a representation of a Christian family joining in choral praise for this purpose. A century or two after this, however, the C. C. seem to have sadly degenerated, and to have become so indecent, that the clergy found it necessary to forbid them. Under the Anglo-Saxon kings, merriment and piety were pleasantly combined in English life, a peculiarity that affected the C. C. of that period not a little; but by the 13th c. the jocoseness had unhappily lapsed into what would now be profaneness. The oldest printed collection of English C. C. bears date 1521. The majority of these, though written by men of learning—priests and teachers—exhibit a lamentable ignorance of the character of the two most prominent persons in the carols—Mary and Jesus. In 1525 was kept the 'still Christmas,' on account of the illnes of King Henry; but with this exception, the sacred season appears to have been regularly celebrated with joyous music and songs during the Tudor period. In 1562, C. C. of a more solemn nature were introduced. By the Puritan parliament, Christmas was abolished altogether, as a remnant of popery, and politically as a rallying point for sedition against the government, and holly and ivy were made seditious badges; and in 1630 the psalms, arranged as carols, were advertised. After the restoration the C. C. again exhibited a hearty, cheerful, and even a jovial character. Those carols with which the dawn of Christmas is now announced in England are generally religious, though not universally so. In France the carols at this season used to be much less sacred than gay. Often, indeed, they were grossly bachanalian. In the United States Christmas carols form a tasteful and well-ordered part of many church-services at this season, especially those in which children have a prominent part.

See an interesting paper in the *Athenæum*, 1856, Dec. 20; also Sandy's *Christmas Carols*, 8vo, 1833; Sylvester's *Christmas Carols and Ballads*.

CHRISTMAS ROSE: see HELLEBORE.

CHRISTOLOGY: doctrine of the person of Christ. The word itself is found rarely in the divines of the 17th c. (see Dean Trench on the *Study of Words*), but the department on scientific theology which it now represents is almost entirely the growth of modern, particularly of German, inquiry. The word C. has but lately become accredited in Great Britain; but it indicates an important and increasing discussion throughout Christendom in this department of theological science. There are only three methods of apprehending the doctrine of the person of Christ: see CHRIST, THE. First, there is the *rationalistic* method. This consists in representing the development of the Messianic idea in Jewish history as purely natural, conditioned by purely human and historical influences—in short, as a subjective or self-originated notion, to which there was no correspondent divine reality. Second, there is what, for want of a better word, may be called the *spiritualistic* method (that of theologians like Neander Rothe, etc.).

This consists in representing the development of the Messianic idea in Jewish history as both natural and supernatural; that is to say, it asserts the existence of a divine objective reality ('the eternal Son of God') as the basis of the subjective idea in the minds of the Jews, and regards the growth of that idea, and the influence of historical circumstances, as the result of a supernatural providence, which culminated in the revelation 'of the mystery of godliness—even He who was manifested in the flesh.' Third, there is the *dogmatic* method, which is the one accepted by the common order of theologians. This consists in representing the doctrine of the person of Christ as *symbolically* known to the spiritually-minded among God's people from the earliest ages. 'Abraham saw his (Christ's) day afar off.' This is interpreted to signify that, by the grace of prophetic illumination, the righteous men of old were enabled to foresee in a mysterious and inexplicable manner the atonement of Christ, as it eventuated in later history. Admitting with the spiritualistic theologians, that the Messianic idea among the Jews underwent, in some sense, a historical development, the dogmatic Christologists differ, in general, from the former by attributing to the higher minds such a knowledge of the *work* of Christ, as logically involves a knowledge of his person and character. The entire absence, however, in the Old Testament, not indeed of any *personal* traits of the Christ but of any development of these into a fully-organized character, such as might be expected of those who had prophetically seen him in his historic personality, even with the eye of faith, has induced many 'orthodox' theologians to shrink from making any statement in regard to what may have been the doctrine of the person of Christ among the ancient Jews

CHRISTOPHE, *krēs-tof'*, Henri, King of Hayti· 1767, Oct. 6—1820, Oct. 8: at one period a slave and tavern-cook in Cape Town, San Domingo, and afterward overseer of a plantation. In 1790, he joined the black insurgents against the French, and, from his gigantic stature, energy, and courage, soon became a leader among them. By Toussaint L'Ouverture, he was appointed brig.gen., and employed to suppress an insurrection headed by Moyse, or Moses, his nephew. C. captured the latter, and, on his execution, succeeded him as gov. of the northern province of French San Domingo. In 1802, he gallantly defended Cape Town when Gen. Leclerc arrived there with a French army intended for the reduction of the blacks, and effected his retreat with 3,000 men, after having burned the greater part of the town. The perfidious seizure of Toussaint, he amply revenged, and during the short-lived government of Dessalines, who was slain by a military conspiracy 1806, Oct., C. was gen.-in-chief of the Haytian army. In 1807, Feb., he was appointed pres. of Hayti for life. A republic being, about the same time, organized at Port-an-Prince, with Petion at its head, civil war commenced between them. 1811, Mar. 28, C. was proclaimed *king* of Hayti, by the name of Henri I.,

and solemnly crowned, 1812, June 2. In 1814, he and Petion suspended hostilities, and by his power and skill, C. was enabled to counteract the attempts made by France to regain authority in the island. His avarice and cruelty led to an insurrection, which was aided by Gen. Boyer, who had succeeded Petion 1818: and the rebellion having spread to Cape Town, C.'s deposition was proclaimed, at the head of the troops, by the Duke of Marmalade, one of the first dignitaries in the kingdom, and C., deserted by his body-guard and all his nobles, shot himself. He left a code of laws, which he called the 'Code Henri,' in imitation of the Code Napoleon.

CHRIS'TOPHER, Herb: see Actæa.

CHRISTOPHER, *kris'to-fer*, Saint: recognized as saint in the Rom. Cath. and Greek churches. He is supposed to have suffered martyrdom about the middle of the 3d c. According to vulgar legend, C., whose name was originally *Adokimos* (the Unrighteous), was a native of Palestine, Syria, or Lycia, and a person of prodigious bulk and strength. His height was 12 ft. So proud was he of his gigantic frame, that he would serve only the mightiest princes. Having attached himself to one, considered the greatest of his day, C. stayed with him for a short time, but soon discovered that his master was terribly afraid of the devil, in consequence of which, C., with fearless consistency, passed into the service of the latter. One day, however, when the devil and he chanced to be walking through a wood, they came across an image of Christ. His new master exhibited such perturbation and alarm at the sight, that C. entirely lost confidence in him, and resolved to find out the Savior, and follow him as the mightiest one. For a long while he searched in vain, but finally he met a hermit, who showed him Christ, and baptized him. C. despised the customary penances as slight and trivial, and in consequence, it was imposed on him to carry Christian pilgrims on his shoulders over a stream which had no bridge. One day, a little child came to the stream; C. took it on his shoulders, but soon began to sink under the weight of his burden. The child was Christ himself, and, to prove it, he commanded C. to stick his staff into the ground. He did so, and next morning it had blossomed into a palm-tree bearing fruit. This miracle converted thousands to Christianity. C.'s success excited the enmity of Dagnus, the prefect of that region, who put him in prison, scourged him with red-hot rods, put a burning helmet on his head, and clapped him on a burning stool. C. still remained uninjured. Multitudes of poisoned arrows were now discharged against him, but they rebounded from his charmed body, and one even wounded the prefect himself in the eye. C. pitied his tormentor, and freely offered his head to the executioner, that the prefect might be healed by the blood which should flow from it. This was done, and, as a matter of course, Dagnus and his family became Christians. The Greek Church celebrates his festival May 9; the Rom. Cath., July 25.

St. C. was greatly invoked in times of pestilence, or when people were digging for treasures, to frighten away the spirits who watched over them. The formula used was called a *Christopher's Prayer.* He was also the patron of an order of moderation, founded in Austria 1517, for the purpose of checking excessive drinking and swearing, and which was called the order of St. Christopher.

CHRISTOPHER'S, *kris'to-fĕrz,* ST., or, popularly, *St. Kitts:* island near the n.e. bend of the great arch of the Antilles, 46 m. w. of Antigua, 2 m. n. of Nevis. With very unequal breadth, it is 20 m. long from s.e. to n.w., containing about 44,000 acres. Pop. (1901) 29,782. It belongs to Great Britain, and has a legislature of its own, with an executive immediately subordinate to the gov.-in-chief of the Leeward group, residing in Antigua. In 1901, the revenue with Nevis was £43,793, having been only £3,638 in 1834; so that, under the system of free labor, it had increased over twelve-fold in 66 years. During the same interval, the imports had risen in value from £63,018 to £149,729, and the exports from £105,267 to £127,051. The staple exports are sugar, rum, and molasses. The debt of the island in 1902 was £72,000. Education is in a promising condition. In 1876 the average attendance at school was 1,525; two schools obtained a first-class, four schools a second-class, and 14 schools a third-class certificate. The total class and capitation grants which were earned amounted to £577.

The chief towns, both seaports with open roadsteads, are Basse-Terre defended by Fort Smith, and Sandy Point, protected by Fort Charles and Brimstone Hill. Of Fort Smith, the exact lat. and long. are 17° 17′ 7″ n., and 62° 48′ w. The mean annual temperature of these places, and of the coast generally, is about 80° F.; but the mornings and evenings, even of the hottest days, are agreeably cool. The length of the island is traversed by a well-wooded ridge of volcanic origin, which has in its centre a crater; and toward the w. extremity of the range, rises the nearly perpendicular crag of Mount Misery, 3,711 ft. above the sea. Over the adjacent slopes, which gradually descend to the water's edge, this central range sends down several streams—almost every plantation, in fact, receiving its rivulet in the rainy season. The springs, though numerous, are yet mostly brackish; and the s. extremity of the island presents a number of salt ponds.

St. Kitts, appropriately named by the natives 'The Fertile Isle,' was discovered by Columbus 1493, and colonized by the English 1623, who were almost immediately joined by some French adventurers. After treacherously exterminating the Caribs, the French and English, often quarrelling, occupied the island till, 1713, the treaty of Utrecht gave the whole to England. In 1782, during the war of American independence, St. Kitts was captured by the French, but restored. 1865, July 31, a terrific fire took place at Basse-Terre.

## CHRIST'S COLLEGE—CHRIST'S HOSPITAL.

CHRIST'S COLLEGE, Cambridge: founded by Henry VI., under the name of God's House, and intended by him to consist of a master, 12 fellows, and 47 scholars. In 1505, however, there were only three fellows besides the master, when Lady Margaret, Countess of Richmond and Derby, mother of Henry VII., 'counting herself as of the Lancaster line, heir to all Henry VI.'s godly intentions,' made up the full number, and endowed the college liberally, changing its name to Christ's College. Edward VI. added one fellow, and three scholars; and Sir John Finch and Sir Thomas Baines increased the number of fellows to 15. C. C. possesses many rich benefactions for the encouragement of students, among which are four studentships founded by Christopher Tancred, worth £107 per annum, and tenable for three years after taking the degree of B.A. A student is elected annually before coming into residence. Among the illustrious men connected with this college may be noted Bp. Latimer, John Milton, and Ralph Cudworth, author of the *Intellectual System*.

CHRIST'S HOSPITAL, Newgate Street, London: classical school, organized as a hospital; founded on the site of the Greyfriars' monastery, by Edward VI., 1553, June 26, as a hospital for orphans and foundlings. It is called usually the 'Blue-coat School,' on account of the dress worn by the boys. This consists of a blue woolen gown or coat with a narrow red-leather girdle round the waist, yellow breeches and yellow stockings, a clergyman's bands at the neck, and a small blue worsted cap, but this last they seldom wear, and are generally seen going about bareheaded; such has been the costume of the boys since the foundation of the school in the reign of Edward VI., the persistency in it through successive generations affording a curious instance of the unchangeableness in some English usages. No boy is admitted before seven years of age, or after ten, and none can remain after fifteen, with the exception of 'King's boys' (i.e., those who attend the mathematical school founded by Charles II. 1672) and 'Grecians' (i.e., the highest class of scholars in the hospital), of whom 8 are sent on various scholarships to the universities of Oxford and Cambridge. Altogether, about 800 boys can be admitted. The right of presentation is vested in the managing governors. Those are the lord mayor of London, the aldermen, and 12 common councilmen. Besides these, all noblemen and gentlemen who benefit the hospital to the extent of £400 are governors. The managing governors are the patrons of several churches, chiefly in Surrey and Essex. In 1880 (when changes in the institution were contemplated) the gross annual income was £70,907—mostly from legacies subsequent to the foundation. King Charles II. enriched it by £7,000, with an additional annuity of £370 10*s*., for the purpose of educating yearly ten boys for the sea-service. Most of the building perished in the great fire of 1666; but, through the generosity of the corporation of London and of wealthy Englishmen, it was soon rebuilt, under the superintendence of Sir Christopher Wren. In the course of time the new hospital fell into decay, and in 1825 a

third structure was erected by Mr. Shaw. The great hall of the hospital is a magnificent room, second only to that of Westminster. C. H. is essentially a classical institution, Latin and Greek being the basis of education; but, to meet wants arising from the changed condition of society, the modern languages, drawing, etc., also are taught. In 1683, the governors built a preparatory school at Hertford, where the children are trained till they are old enough to enter the hospital. The *girls*, however, remain permanently here. It can receive about 400 of both sexes. Dependent schools in Newgate street accommodate 1,200 children.

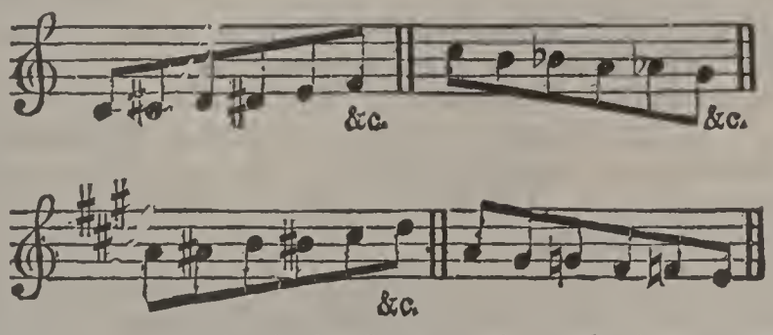
CHRIST'S THORN, n. a prickly shrub, a native of Palestine, and common in the hedges of Judæa—so named from the supposition that from it Christ's crown of thorns was made; the *Palĭūrŭs aculĕātus*, ord. *Rhamnācĕæ:* see JUJUBE: PALIURUS.

CHROMÆSTHESIA, *krōm-ĕs-thē'si-ä* [Gr. χρῶμα, color αἴσθησις feeling]: a term used in psychology to designate the close association between other sensations, usually sounds, and colors. Certain individuals invariably associate specific colors with letters of words or musical tones. In one case *e.g.* the proper name Maud was said always to have a dirty brown color. Sometimes the association is with separate letters and the words take on the colors of the components, in other cases the words as a whole have a specific color. Both early association and specific physiological connections have been offered to explain the phenomenon, also known as 'colored hearing' and 'pseudo-chromæsthesia.' The most important form of *synæsthesia*.

CHROMATIC, n. *krō-măt'ĭk* [Gr. *chrōmatĭkos*, suited for color—from *chrōma*, color; *chrōmătos*, of color]: relating to colors: see ACHROMATIC. CHROMATIC SCALE [from the intermediate notes formerly printed in colors]: term applied (improperly) to the scale in music that proceeds by semitones. CHROMAT'ICALLY, ad. *-kăl-ĭ*. CHROMAT'ICS, n. plu. *-ĭks*, that part of the science of optics (q.v.) which explains the properties of the colors of light and of natural bodies. Before 1666, when Sir Isaac Newton began to investigate this subject, the notions which prevailed respecting the nature of colors were merely fanciful. Till Descartes' time, indeed, it seems not to have been conceived that color had anything to do with light. As examples of the notions prevalent at very early times, may be cited those propounded by Pythagoras and Zeno. According to the former, color was the superficies of bodies; according to the latter, it was 'the first configuration of matter' —whatever that may be. It is now settled that white light is not homogeneous, but consists of rays of different colors, endued with different degrees of refrangibility, and that the different colors of bodies arise from their reflecting this or that kind of rays most copiously. According to this, a body that appears red reflects red rays in greater abundance than the others; and one that appears black reflects none of the rays—in other words, absorbs all the light that falls

upon it. The analysis of a beam of the sun's light by a prism was the experiment by which Newton demonstrated his great optical discovery of the unequal refrangibility of the variously colored rays, and laid the foundations for the above theory of color. For an account of this experiment, and of the most interesting phenomena presented by the spectrum, see SPECTRUM. Newton concluded from his experiments that white light is composed of seven colors, which he called the primary colors—viz., red, orange, yellow, green, blue, indigo, and violet; and that all other shades of color arise from the admixture of these in different proportions. Sir David Brewster, on the other hand, conceives that he has established that the primary colors are only three in number—red, yellow, and blue. This result he obtained by examining the rays of the spectrum through different absorbing media—a mode of experiment now admitted to be fallacious in principle. Professor Maxwell, by direct examination of the rays, concludes that the three primary colors are red, green, and blue. Recently a theory has been propounded, that all the colors are the results of the admixture of white light and of shade, or darkness; but as yet no attempt has been made to support this theory by direct experiment on the sun's rays. It is rested on results obtained by combining by motion certain proportions of white and black pigments on a revolving card. See LIGHT: DISPERSION: NEWTON'S RINGS.

CHROMATIC, in Music: term applied to a series of notes at the distance of a semitone from each other. Such a series is produced by dividing the whole tones of the diatonic scale into semitones, so that with the two diatonic semitones, already in the natural scale, the octave is divided into 12 semitones. Ascending C. passages are formed by the whole tones of the diatonic scale being raised or elevated by a sharp or a natural, according to key, and descending passages by their being lowered by a flat or a natural thus:




It is usual to speak of the Chromatic scale, but not with propriety as it is only a melodious progression of semitones, certain notes of which belong to and form the diatonic scale, showing that the foundation of the system of music does not rest on a Chromatic basis, but on the natural diatonic progression of sounds.

CHROMATIN, *krō′ma-tĭn*, a substance in the nucleus of a cell which is readily stained by certain reagents, such as carmine, hæmatoxylin, and suffranin, so as to be dis-

tinguished from the other substance called achromatin or linin. This chromatin is made up of minute spherical or rod-like particles called 'chromosomes.' The latter bodies in the course of cell-division are of equal size in the same cell, and their number is the same in all the cells of all the tissues of the same species. The chromatin particles are of especial interest because they are supposed to be the bearers of heredity, and are thus supposed to form the physical basis of this unknown property of organic life.

CHROMATOGRAPHY, n. *krō′mă-tŏg′ră-fĭ* [Gr. *chrōma*, color; *graphē*, writing]: a treatise on colors; the art of printing in colors—also called CHROMO-LITHOGRAPHY.

CHROMATOMETER, n. *krō′mă-tŏm′ĕ-tėr* [Gr. *chrōma*, color; *metron*, measure]: scale for measuring color.

CHROMATOPHORES, n. plu. *krō-măt′ŏ-fōrz* [Gr. *chrōma*, color, *chrōmătos*, of color; *phorĕō*, I carry]: little sacs containing pigment-granules, found in the integument of cuttle fishes, etc. The possibility of change of color in the chameleon, frogs, the squid, etc., is due to certain cells in the cutis which are filled with pigment. These pigment-cells are called chromatophores, and under the stimulus of light may expand or contract. When expanded they are highly ramified, and when contracted are roundish. The pigment differs in different individuals and in different parts of the body, being yellow, brown, black, and at times even red or green. In the goby (a fish), the chromatophores, which are yellow or greenish-yellow when distended, become orange when contracted; while the orange or red ones, when shrunk, become brown or even black. In the same fish a still different kind of chromatophores are filled with iridescent crystals of marvelous delicacy, which in expansion become visible as spots of metallic sheen. It is on the distribution and different depth in the skin of the chromatophores that the pattern of markings of the skin of changeable animals depend. The common squid is very beautifully tinted, and under the microscope the chromatophores can be seen dilating and contracting, giving off a remarkable play of all the colors of the rainbow. The value of this power, which is under control, is that it gives the animal means of concealment by adapting its color to that of its surroundings. CHROMATOPHOROUS, a. *krō′mă-tŏf′ŏ-rŭs*, containing or secreting coloring matter.

CHROMATOPSEUDOPSIS, n. *krōm-a-tŏp′sū-dŏp′sĭs* [Gr. *chroma*, color, *opsis*, vision, *pseudes*, false]: abnormal color vision. See COLOR BLINDNESS.

CHROMATOPSIA, n. *krōm-a-tŏp′sĭ-a* [Gr. *chroma*, color, *opsis*, vision]: the abnormal perception of color when occasioned by some temporary condition of the body such as the yellow vision after taking santonin. The terms Chromopsia and Chroöpsia are synonyms.

CHROMATROPE, n. *krō′mă-trŏp* [Gr. *chrōma*, color, *tropē*, turn, rotation]. a toy consisting of a disk painted

with arcs of circles in brilliant colors in such a manner that when the disk is revolved centrifugal or centripetal streams of color seem to flow through it. The term is also applied to an attachment for a magic lantern, by which, on the revolution of two painted disks of glass, kaleidoscopic effects are projected onto the screen.

CHROMATYPE, *krō′ma-tīp* [Gr. *chrome*, color; *typos*, impression]: photographic process, and its result, thus described by its discoverer, R. Hunt. One drachm of sulphate of copper is dissolved in one ounce of distilled water, to which is added half an ounce of a saturated solution of bichromate of potash; this solution is applied to the surface of the paper, and when dry, it is fit for use, and may be kept for any length of time without spoiling. When exposed to sunshine, the first change is to a dull brown, and if checked in this stage of the process, a negative picture results; but if the action of light is continued, the browning gives way, and a positive yellow picture on a white ground is obtained. In either case, if the paper, when removed from sunshine, is washed over with a solution of nitrate of silver, a very beautiful positive picture results. In practice, it will be found advantageous to allow the bleaching action to go on, to some extent; the picture resulting from this will be clearer and more defined than that obtained when the action is checked at the brown stage. To fix these pictures, it is necessary to remove the nitrate of silver, which is done by washing them in pure water. If the water contains any chlorides, the picture suffers, and long soaking in such water obliterates it—or if a few grains of common salt be added, the apparent destruction is rapid. The picture is, however, capable of restoration, all that is necessary being to expose it to sunshine for a quarter of an hour, when it revives; but instead of being of a red color, it assumes a lilac tint, the shades of color depending upon the quantity of salt used to decompose the chromate of silver which forms the shadow parts of the picture. The substitution of sulphate of nickel for sulphate of copper, has been suggested as yielding a higher degree of sensitiveness and greater definition. Neither process has been much used.

CHROME, n. *krōm*. See CHROMIUM.

CHROMIC ACID. See CHROMIUM.

CHROMIC IRON: syn. *Chromite;* a mineral composed principally of oxides of iron and chromium: see CHROMIUM. One typical analysis gives iron protoxide 32%, chromium sesquioxide 68%. Some of the chromium is generally replaced by aluminium and some of the iron by the same or by magnesium. Its color is black or brownish-black; without cleavage; its crystals are octahedral; it is attracted by magnet. It is extensively mined in California and Scotland, as an ore of chromium. Hardness 5·5. Specific gravity, 4·32—4·6.

CHROMITE, *krō′mīt*, a mineral composed principally of oxides of iron and chromium: see CHROMIUM.

CHROMIUM, n. *krō′mĭ-ŭm* [Gr. *chrōma*, color]: one of the metals so named from the bright colors of its salts. It was discovered by Vauquelin, 1797. C. occurs as chrome-iron stone, $FeO.Cr_2O_3$, and as a basic lead chromate. Metallic C. is prepared by heating a mixture of charcoal and chromic oxide, $Cr_2O_3$, in an electric furnace, or by igniting a mixture of the oxide and aluminum. C. melts with greater difficulty than platinum and, if alloyed with a little carbon, can only be scratched by a diamond. It forms the oxides CrO, $Cr_2O_3$, and $CrO_3$. The first, *chromous oxide*, is basic, unstable and yields salts such as $CrCl_2$, which are also unstable. Chromic oxide $Cr_2O_3$, is also basic and gives rise to the ordinary salts of C. such as *chromic sulphate* $Cr_2(SO_4)_3.15H_2O$; this resembles the corresponding compound of aluminum, and with the sulphates of the alkali metals or ammonium, forms *chrome alums*, such as potassium chromium sulphate, $KCr(SO_4)_2.12H_2O$. (See ALUM.) *Chromic anhydride*, $CrO_3$, yields unstable acids which form salts called *chromates* and *bichromates*, respectively, such as potassium chromate, $K_2SO_4$ (yellow) and potassium bichromate, $K_2Cr_2O_7$ (red). In addition, chromium forms numerous complex compounds with ammonia, and amines and also oxides containing a larger proportion of oxygen. Industrially, metallic C. is used to alloy with iron, the product being harder, more tenacious and elastic, and finer in texture than ordinary steel. Chrome alum is largely used in dyeing as a MORDANT (q. v.). Potassium bichromate and chromic anhydride are used in electric batteries and as oxidizing agents. Large numbers of chromium pigments, such as chrome yellow (basic lead chromate) are prepared from potassium or sodium bichromate, the former of which is also used in the tanning of leather. The color of rubies is due to the presence of a trace of C. The symbol of chromium is Cr, atomic weight 52.1 (O = 16) or 51.7 (H = 1). CHROMIC, a. *krō′mĭk*, of or from chromium. CHROMATE, n. *krō′māt*, a compound of *chromic acid* with a base: CHROMATISM, n. *krō′mă-tĭzm*, and CHROMISM, n. *krō′mĭzm*, in *bot.*, an abnormal or unnatural coloring of plants: CHROME-OCHRE, *-ō′kr*, oxide of chrome of a fine yellowish green: CHROMITE, n. *krō′mīt*, or CHROMATE OF IRON, or CHROME-IRON ORE (see above).

CHROMOGEN, n. *krō′mō-jĕn* [Gr. *chrōma*, color; *gennăō* I produce]; in *bot.*, the coloring matter of petals; any coloring matter except green; also, in same sense, CHROMULE, n. *krō′mūl* [Gr. *ulē*, matter]. In chemistry the term applied to a complex. which, when combined with hydroxyl, OH, amins, $NH_2$ or similar groups, can form *leuco-bases*. These latter are readily converted into true *dyes*.

CHROMO-LITHOGRAPH, n. *krō′mō-lĭth′ō-grăf*, colloq., CHROMO [Gr. *chrōma*, color; Eng. *lithograph*]: lithograph printed in colors. CHROMO-LITHOGRAPHY, the art of printing in colors: see LITHOGRAPHY. CHROMO-PHOTOGRAPHY [see PHOTOGRAPHY]: the art of producing photographs in their natural colors. CHROMO-XYLOGRAPH, n.

*zĭl′ō′grāf* [Gr. *xulon*, wood, cut-wood]: a wood-engraving printed in colors instead of black from an ordinary block: see under XYLO.

CHROMOSPHERE, n. *krō′mō-sfēr* [Gr. *chrōma*, color; *sphaira*, a sphere]: the outer cloudy envelope around the sun through which the light of the photosphere must pass.

CHROMULE, n. *krō′mūl* [Gr. *chrōma*, color; *hulē*, matter]: any coloring matter other than green; the coloring matter of petals; see EXTRACTS.

CHRONIC, a. *krŏn′ĭk*, or CHRONICAL, a. *-ĭ-kăl* [Gr. *chronĭkos;* F. *chronique*—from Gr. *chronos* time, duration]: continuing a long time, as a disease; the opposite of acute. CHRONICLE, n. *krŏn′ĭ-kl*, history; specially, history in which events are treated in the order of time. A C. is understood to differ from *annals* in being more connected and full, the latter merely recording individual occurrences under the successive years or other dates. Most of the older histories are called chronicles, such as the *Saxon Chronicle*, *Holinshed's Chronicle*. The term is seldom applied to a modern book. V. to record events in the order of time; to record or register. CHRONICLING, imp. *krŏn′ĭ-klĭng*. CHRONICLED, pp. *krŏn′ĭ-kld*, recorded or registered. CHRON′ICLER, n. *-klėr*, one who; a historian.

CHRON′ICLES, FIRST AND SECOND BOOKS OF: in the Hebrew canon of the Scriptures, a single book called *Events of the Times*. In the Septuagint this was divided into two, and entitled *Paraleipomena* (*Things Omitted*). This name was of dubious propriety, as the book is not a mere supplement to others. Jerome suggested *Chronicon*. The authorship is uncertain. Jewish and Christian tradition ascribes the work to Ezra; but internal evidence argues a later date. Eng., the passage 1 Chron. iii. 19–24 appears to reckon six generations of the descendants of Zerubbabel, whereof Ezra (viii 2) seems to have been contemporary with the fourth. Ewald supposes the compiler to have been one of the guild of singers, in whose mind the conception of Israel as a nation had contracted to that of Jerusalem and the temple-worship; his view is still theocratic, but municipal, ecclesiastical, liturgical. This was perhaps natural after the long captivity; it was nearly inevitable after the cessation of prophecy. The book of Kings is written in the prophetic spirit; in Chronicles that spirit is absent, and the history is looked at with the eyes of one occupied by temple-functions; and believing that Jehovah is especially if not exclusively present therein. In the books of Samuel and Kings the interests of Providence and of humanity are not localized to this extent; so they contain (from this later view-point) much that is irrelevant or unimportant, and lack much that is of value—as in laying so little stress on the history of the ordinances of worship. The comparatively secular matter seems slurred over or omitted.—Such appears to be the spirit and intent of Chronicles, at the same time, the charges of distortion, invention and consequent general worthlessness, brought

by De Wette and the rationalists, are dismissed or refuted by the best recent critics. The writer simply availed himself of the license of selection, arrangement, and coloring common to all ancient historians, alike sacred and secular. His main source was an extensive work now lost, variously styled 'Book of the Kings of Israel and Judah,' 'Book of the Kings of Judah and Israel,' 'Book of the Kings of Israel,' and 'Affairs of the Kings of Israel.' This is cited some ten times in Chronicles, and was apparently used also in preparing the canonical book of Kings, which however, employed other materials not known to Chronicles. Chronicles begins with Adam, and gives nine chapters to the genealogies; here, as elsewhere, these convey statistics in the form of a narrative, the names of individuals sometimes standing for branches of a family. Nothing else is retained of the earlier history, the times preceding David's reign affording little to the compiler's purpose. In the account of David and Solomon he pursues a course parallel with Samuel and Kings, but omits many items of personal interest as not bearing on his main theme. In the later annals he neglects the ten tribes, and discusses the affairs of Judah with a view to edification, striving to justify and make prominent God's ways with men in rewarding the good and punishing the rebellious. The writer is a preacher quite as much as a chronicler. His additions to the earlier records deal chiefly with events which serve his purpose of enforcing obedience, or with feasts, appointments of the temple, and Levitical archæology. He ends abruptly with the proclamation of Cyrus to rebuild the temple, and that is left to be continued in the book of Ezra. In general he seems to have followed his sources closely, and when he varies from earlier annals, as in a higher estimate of the numbers of Israel (1 Chron. xxi. 5, cf. 2 Sam. xxiv. 24), he conforms to later usage, and doubtless to accounts that lay before him. Thus his much-disputed account of the captivity and repentance of Manasseh is referred (2 Chron. xxxiii. 18) to 'the book of the Kings of Israel,' and derives support from some Assyrian inscriptions. We have in Chronicles a far narrower view than in some other Old Testament books of the scope of the divine will and the mission of Israel, but there is no reason to distrust the writer's good faith. The many textual and historical difficulties presented by Chronicles, of which Jerome complained, have been but partially solved. Keil (1870) and Zöckler (1874) have written commentaries on Chronicles; the best is that of Bertheau (1854, trans. 1857).

CHRONOGRAM, n. *krŏn'ŏ-grām*, or CHRONOGRAPH [Gr. *chronos, time; gramma*, a writing]: whimsical device of the later Romans, resuscitated during the *renaissance* period, by which a date is given by selecting certain letters among those which form an inscription, and printing them larger than the others. The following C., was made from the name of George Villiers, first Duke of Buckingham:

GEORGIVS. DVX. BVCKINGAMIÆ.

The date MDCXVVVIII (1628) is that of the year in which the duke was murdered by Felton, at Portsmouth. See Hilton's *Chronograms* (1882). CHRON'OGRAMMAT'IC, a. *-măt'ĭk*, or CHRON'OGRAMMAT'ICAL, a. *-ĭ-kăl*. CHRON'OGRAMMAT'ICALLY. ad. *-lĭ*. CHRON'OGRAM'MATIST, a. *-mă-tĭst*, a writer of.

CHRONOGRAPH, n. *krŏn'ō-grăf*; an instrument for recording (1) the exact instant an event occurs, or (2) short intervals of time. It is used in astronomy, as in recording the transit of a star; in physics, as in recording the speed of a projectile; in physiology, as in measuring the speed of the nerve impulse; in psychology, as in measuring the time of mental processes. See REACTION-TIME. The measurements are made in 1 sec., .1 sec., .01 sec., .001 sec., or .0001 sec., as the case may require. There are three essentials in all types of chronographs: a moving and sensitive surface, a time-tracer, and an event tracer. The surface is usually a smoked paper on a cylinder which is revolved by a clock work (kymograph) or an electric motor. If the tracing is to be made by ink, pencil, or carbon paper, ordinary ticker tape may be used. The time divisions are taken from a pendulum or tuning fork which is so connected as to trace its vibrations in a wavy line. The event is recorded on the sensitive surface either by an electric marker or by an electric spark. The latter, which is called the spark method, is the most accurate. The time-tracing and the event-tracing run parallel and the duration of the event, which is marked off, is counted in terms of the number of vibrations in the corresponding section of the time-tracing. Thus, if the 100 vibration fork is used, each wave represents .01 sec.

The simplest kind of a chronograph, for .02 sec. units or larger, may be made by mounting fountain pens on the armatures of electric door-bells and allowing these to trace on ticker tape.

CHRONOLOGY, n. *krŏ-nŏl'ŏ-jĭ* [Gr. *chronos*, time or duration; *logos*, discourse: F. *chronologie*]: the science that treats of the dates of past events and arranges them in order; the method of measuring or computing time. CHRONOLOGICAL, a. *krŏn'ō-lŏj'ĭ-kăl*, or CHRON'OLOG'IC, a. *-ĭk*, relating to chronology; containing an account of past events in the order of time. CHRON'OLOG'ICALLY, ad. *-lĭ*. CHRONOLOGIST, n. *krŏ-nŏl'-o-jĭst*, or CHRONOL'OGER, n. *-jėr*, one who endeavors to discover the true dates of past events, and to arrange them in order; one versed in chronology.

CHRONOL'OGY: science of the divisions of time, and of the assignment of dates of past events. It has two main branches—mathematical Chronology and historical Chronology. Mathematical Chronology is engaged with such of the units for the measurement of time as begin and end with the period of complete evolution of recurring celestial phenomena: see CALENDAR: YEAR: MONTH: DAY: and CYCLE. Historical Chronology uses

these units among others to measure the distance in point of time between events, and to fix their *dates*. As in geography and navigation, longitude is measured from some arbitrary line such as the meridian through Greenwich, so in historical Chronology, *dates* are fixed by giving their distance from some arbitrary point of time, chosen usually because of some remarkable occurrence which signalized it. Such a fixed point, or *epoch*, forms the beginning of an *era*, though in common usage these two words are not always exactly discriminated. It is thus that *dates* have been aptly said to be to events in history what the latitude and longitude of places are to the places in geography and navigation. The mathematical, or, to speak more properly, the astronomical units of time above referred to have not been the only units used in historical Chronology. In early times the more accurate methods of mathematics were unknown, and such vague periods as 'a generation,' or the lifetime of leading persons in a nation, such as the priestesses of Juno, or of the kings, were assumed as units in historical Chronology. The great variety of eras, too, in ancient times confuses the student. Thus the era of the Greeks began with the year of the first olympiad, or that in which Corœbus was victor; being the first celebration of the games at which the victor's name was recorded, and which is calculated to correspond to the year B.C. 776. From this epoch, the Greeks measured time by olympiads or periods of four years. Thus, the 3d year of the 12th olympiad would be B.C. 729. The Roman era was reckoned from the founding of the city, being either B.C. 752 or 753. The Roman practice of dating events from the building of the city, seems the first instance of the method of reckoning time from a fixed point by single years, and thus forms one of the great stages in chronology. The Mohammedan era commences with the flight of Mohammed, A.D. 622, called the *Hedjirah* (q.v.). The Roman and Greek methods of measuring time continued in use long after the birth of Christ; the olympiads, indeed, appear to have been employed in Europe till the 304th olympiad, or A.D. 440. From A.D. 312, however, the public mode of computation throughout the Roman empire was by indictions, which were periods of 15 years, beginning with 312 (see INDICTION); and this mode was at one time almost universally followed in the west, and in France, was not altogether discontinued till the end of the 15th c. The Christian era, or era of the Incarnation, is said to have been first proposed A.D. 527, and is now universally used in Christendom, and even by some non-Christian nations. Part of the business of Chronology is to determine the relationships of the different eras, so as to enable one to express, in the language appropriate to one mode of computation, the date of an event recorded in another. Owing to the birth of Christ being a comparatively recent event, the Christian era is attended by the inconvenience of counting backward from it for the dates of occurrences prior to it. To obviate

this, various comprehensive periods, such as the Julian and Louisian periods have been invented, applicable to most events within the limits of history.

Various systems of Chronology, such as the Chinese, Babylonian, Egyptian, Indian, and Chaldæan, are worthy of attention. For accounts of the periods which these nations respectively assign to their histories, see CHINESE EMPIRE: BABYLON: etc. Of *Sacred* Chronology there have been various systems. In these the epochs are the creation of the world, and the flood; but the chief copies of the Old Testament do not agree as to the dates of these events. While the Hebrew text reckons 4,000 years from the creation to the birth of Christ, and to the flood 1,656 years, the Samaritan makes the former much longer, though it counts from the creation to the flood only 1,307 years. The Septuagint version differs from both. It removes the creation of the world to 6,000 years before Christ, and 2,250 years before the flood. In the lack of historic data these differences are impossible of reconciliation. The Bible makes no attempt at a scientific Chronology any more than at a scientific treatment of other departments of human inquiry. It is now, however, universally admitted, that the creation of the world is not to be regarded as having occurred even so recently as B.C. 6,000. The modern and doubtless the most reasonable understanding of the first chapter of Genesis leaves the period of the creation quite indefinite, and one modern scheme of interpretation stretches out the days of creation into periods of indefinite length. The *Newtonian* Chronology was an attempt, now generally admitted to have been unsuccessful, to rectify the obvious blunders of ancient chronologers, by determining certain epochs by means partly of astronomical calculations, and partly of the critical examination of such chronicles as measured time by reigns and generations. By a very fine argument, the soundness of which has since been found questionable, Newton set down the date of the Argonautic expedition as being 43 years after the death of Solomon, or B.C. 937.

The computation of time by divisions or periods, so as to fix dates by bringing them into relation with each other, seems to have been practically unknown till B.C. 8th century. In the earlier ages no records were made, and when they began to exist they perished through neglect, accident or the religious or patriotic bigotry of discoverers and conquerors. Thus the first annals of Greeks, Etruscans, and Romans are lost; the traditions of the Druids were neither written nor long remembered; Chi-Hoang-Ti is said to have burned the Chinese books about B.C. 220; and the Spaniards destroyed the Mexican picture-writings. There can be no Chronology without epochs from which to start, and epochs were long local or at best national. The Greeks, after Timæus, about B.C. 350, reckoned from that olympiad in which Coræbus won at the olympic games, B.C. 776; the Babylonians from the era of Nabonassar, B.C. 747: and the Romans from the foundation of their

city, variously placed from B.C. 747 to 753; the latter date, given by Varro, is now agreed on. Des Vignoles collected over 200 estimates as to the creation, which vary from B.C. 3483 to 6984; yet an Indian era places it at B.C. 3102. Abp. Usher's computation, B. C. 4004, though highly arbitrary, has been generally accepted, and agreement is everything here. The chronologic efforts of Berosus, Manetho, Eratosthenes, and Apollodorus (B.C. 3d and 2d c.) were well-intentioned rather than successful, for their works survive only in fragments. In computing from any epoch, the month and day (if known) must be considered as well as the year: e.g., the olympiads were counted from July 1, and American copyrights were long dated in such a 'year of the independence of the United States,' reckoning from 1776, July 4. An approximate list of eras, epochs, or periods, with their dates of commencement as known or supposed, is here subjoined:

| | B.C. |
|---|---|
| Grecian mundane | 5598, Sep. 1. |
| Constantinople, civil | 5508, Sep. 1. |
| Alexandria | 5502, Aug. 29. |
| Antioch mundane | 5492, Sep. 1. |
| Julian period | 4713, Jan. 1. |
| Mundane Usher | 4004, Oct. |
| " Jewish | 3761, Oct. |
| Abraham | 2015, Oct. 1. |
| Olympiads | 776, July 1. |
| Rome | 753, Apr. 24. |
| Nabonassar | 747, Feb. 26. |
| Metonic Cycle | 432, July 15. |
| Macedonian (Seleucidæ) | 312, Sep. 1. |
| Tyrian | 126, Oct. 19. |
| Sidonian | 110, Oct. |
| Cæsarean of Antioch | 48, Sep. 1. |
| Julian year | 45, Jan. 1. |
| Cæsarean of Spain | 38, Jan. 1. |
| Era of Actium | 30, Jan. 1. |
| Augustan | 27, Feb. 14. |
| | A.D. |
| Christian (or vulgar) | 1, Jan. 1. |
| Destruction of Jerusalem | 69, Sep. 1. |
| Era of Maccabees | 166, Nov. 24. |
| " Diocletian, or of Martyrs | 284, Aug. 29. |
| " Ascension | 295, Nov. 12. |
| Armenian | 552, July 9. |
| Mohammedan Hegira | 622, July 16. |
| Persian, of Yezdegird | 632, June 16. |

CHRONOMETER, n. *krŏ-nŏm′ĕ-tėr* [Gr. *chronos*, time, *metron*, a measure] any instrument or machine that measures time, as a clock or a dial; usually a large watch, fitted with a compensating balance-wheel, and various precautions against irregularity, and constructed with great nicety, for use at sea: see WATCH: HOROLOGY. CHRONOMETRIC, a. *krŏn′ŏ-mĕt′rĭk*, or CHRON′OMET′RICAL, a *-rĭ-kăl*, pertaining to. CHRONOMETRY, n. *krŏ-nŏm′ĕ-trĭ*, the art of measuring time, or of constructing chronometers.

CHRONOSCOPE *krŏn′ō-skōp*: an instrument used in measuring short intervals of time. It can be used for most of the purposes of the chronograph and has the advantage of direct and immediate reading. There are four types of chronoscopes now in use: The Hipp chronoscope

and the D'Arsonval chronometer are clockworks which carry hands that may be started and stopped by means of an electric detent. The Sanford vernier chronoscope consists essentially of two bobs suspended by threads of unequal length. In the Fitz, the Scripture, and the Bergstroin pendulum chronoscopes, the pendulum carries a pointer which may be stopped at any point on a scale by an electric detent. The Seashore spark chronoscope combines the pendulum action with the graphic spark method. See Chronograph: CHRONOMETER.

CHROOLEPOID, a. *krō-ōl′ĕ-poyd* [Gr, *chrŏŏs*, the skin; *lepĭda*, a scale; *eidos*, resemblance]: in *bot.*, made up of small yellow scales. CHROOLEPUS, n. *krō-ōl′ĕ-pŭs*, a curious genus of algæ found on damp walls, etc., having orange tints when fresh.

CHROSPERMA, *krō-spėr′ma*: a monotypic genus of plants of the natural order *Melanthaceæ;* the bunch-flower. The single species (*Muscœtoxicum*) is commonly known as fly-poison, so called from its deadly effect on flies and similar insects. It abounds in dry sheltered soil from Arkansas and Tennessee eastward along the seaboard of the United States.

CHRUDIM, *chrô′dĭm:* town of Bohemia, beautifully situated on a small river, about 62 m. s.e. of Prague. It is walled, has a noble collegiate church, a high school and Capuchin convent, manufactures of cloth, and very important horse-markets. Pop. 13,000.

CHRYSALIS, n. *krĭs′ā-lĭs*, or CHRYS′ALID, n. [L. *chrysălis* —from Gr. *chrusallis*, the gold-colored sheaths of butterflies —from *chrusos*, gold], the dormant stage which caterpillars

Chrysalises.

*a*, Orange-tip Butterfly; *b*, Black-veined White Butterfly; *c*, Swallow tailed Butterfly; *d*, Purple Emperor; *e*, Silver-washed Fritillary; *f*, Duke of Burgunday Fritillary.

pass through before emerging into the winged state, as butterflies, moths, etc., strictly belonging to those *pupæ* of butterflies which are adorned with golden spots, but extended to the pupæ of lepidopterous insects generally, and even of other orders of insects. The chrysalids of lepidopterous insects are inclosed in a somewhat horny membranous case; sometimes very angular, sometimes nearly round; generally pointed at the abdominal end, sometimes at both ends; and before the caterpillar undergoes its transformation into this state it often spins for itself a silken cocoon, with which earth and other foreign substances are sometimes mixed, so as to increase its size, and within which the chrysalid is concealed. Chrysalids are often suspended by cords, and generally remain nearly at rest; some have the power of burying themselves in the earth; others are bound by a single silken thread which passes round their middle (see cut); some twirl themselves round when touched, or when the stalk or leaf to which they are suspended is touched; and in general, they give signs of life, when disturbed, by violent contortions of the abdominal part: see INSECTS: PUPA: LEPIDOPTERA: BUTTERFLY: HAWK-MOTH: MOTH: SILKWORM. CHRYS'ALID, a. *-lĭd*, pertaining to a chrysalis.

CHRYSANTHEMUM, n. *krĭ-săn'thĕ-mŭm* [Gr. *chrusos*, gold; *anthĕmon*, a flower]: genus of plants of the nat. ord. *Compositæ*, sub-ord. *Corymbiferæ;* having a hemispherical or nearly flat involucre, with imbricated scales, membranous at the margin, a naked receptacle, the florets of the disk tubular and hermaphrodite, those of the ray strap-shaped and female, the fruit destitute of pappus. The species of this genus are annuals, perennials, or shrubby; and all have leafy stems. They are natives chiefly of the temperate parts of the old world. *C. leucanthemum*, the OX-EYE, or OX-EYE DAISY, is abundant in fields, meadows, and grassy places of woods, in most parts of Europe. It has large flowers, with white ray and yellow disk. It is often a troublesome weed among hay and in pastures; being perennial, and having a creeping brittle root-stock, it is not easily extirpated. CORN MARIGOLD, frequent weed in cornfields, an annual, with large, deep yellow flowers. It is dealt with like annual weeds in general, by pulling it when young. —*C. carinatum*, an annual species with white ray and dark-red disk, the scales of the involucre keeled, native of Barbary, is frequently cultivated in green-houses or—where climate permits—in flower-gardens. The favorite

Chrysanthemum.

species of the gardener is, however, *C. Indicum*, the CHINESE or INDIAN C., native of China, Cochin-China, and Japan, long cultivated in its native countries as an ornamental plant, and of which there are many varieties. Its colors are very various—red, lilac, rose-color, white, yellow, orange, or two colors combined. It flowers in autumn and winter. It is easy of cultivation, thrives best in a light, rich soil, is easily propagated by cuttings, suckers, or parting the roots. It is reckoned among florists' flowers.

CHRYSE (Golden Land): ancient name for the regions of Indo-China.

CHRYSELEPHANTINE, a. *krĭs'ĕl-ĕ-făn'tĭn* [Gr. *chrusos*, gold; *elephan'ta*, ivory]: made of gold and ivory. The art of making images of gold and ivory was extensively practiced among the Greeks. Winckelmann has calculated that about 100 statues of this kind are mentioned by the ancients. The colossal works executed by Phidias at Athens, in the time of Pericles, are the most famous of this class, the greatest being the Pallas of the Parthenon. It was 26 cubits high, and represented the goddess in armor, covered with a long robe. The famous Olympian Jupiter of Phidias, executed in the same materials, also was a world-wide wonder. The combination of gold and ivory was used chiefly in temple statues; and though the execution of the more famous works of this class belongs to an advanced period of art, the use of various materials in the same statue was very ancient, probably borrowed from the custom of adorning the wooden images of the earliest time with the precious metals. Sometimes, too, the head, the arms and hands, and the feet were of marble, while the rest was of wood, covered with thin plates of gold. These were called aërolites or acroliths (q. v.): see SCULPTURE.

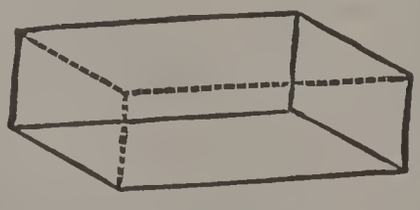
CHRYSIPPUS, *krĭ-sĭp'pŭs:* stoic philosopher, b. abt. B.C. 280, at Soli in Cilicia. He came to Athens when a youth, and eagerly addicted himself to philosophical pursuits. His principal master was Cleanthes, though he is said to have studied also under the academic teachers, Arcesilaus and Lacydes, and learned from them what were the objections urged by skeptics against the doctrines of the stoics. He had the reputation of being the keenest disputant of his age, and was happily described as 'the knife for the academic knots.' In fact, his logic was held to be so convincing that people were wont to say: 'If the gods make use of dialectic, it can only be that of Chrysippus.' It is also related of him that he told Cleanthes he wanted to know merely the principles of his system, as he intended to find arguments for them himself; and this story appears to indicate his true position in philosophy. He was not the creator of a new system, but the expounder of an old. C.'s industry was great: he seldom wrote less than 500 lines a day, and is said to have composed more than 700 works. Many of these, however, were compilations, not characterized by great beauty of style. Only a variety of fragments remain, edited by Petersen 1827. For

C. and the stoics, see Zeller's great work on the history of Greek philosophy.

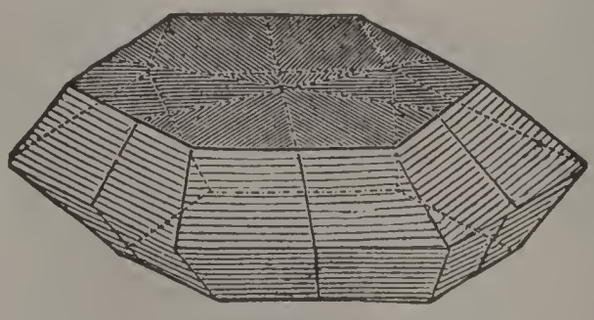
CHRYSIS, *krĭs'ĭs:* Linnæan genus of hymenopterous insects, now constituting a family *Chrysidæ*, allied to the *Ichneumonidæ*, and forming a connecting link between them and bees, wasps, etc. The French call them *guêpes dorées* (gilded wasps), and they sometimes receive the English names of *golden-tailed* and *ruby-tailed flies.* They delight in sunshine, and may be seen poised in the air, the motion of their wings being so rapid as to render the body alone of the insect visible.

CHRYSOBALANACEÆ, *krĭs-o-băl-an-ā'sē-ē*, or CHRYSOBALANEÆ, *krĭs-o-băl-án'ē-ē:* according to some botanists, a distinct nat. ord. of plants; according to others, a sub-order of ROSACEÆ (q.v.). They are distinguished from the other plants usually included in the order rosaceæ by their irregular petals, and by having the stamens also irregular, either in size or position; the ovary stalked, its stalk adhering on one side to the calyx, the style proceeding from its base. The fruit is a drupe of one or two cells. The species are trees or shrubs, natives generally of tropical and sub-tropical regions. About 50 species are known. The fruit of many is eatable, as the COCOA PLUMS (q.v.) of the West Indies (*chrysobalanus*), the fruit of *parinarium excelsum* in Sierra Leone, and that of *moquilea grandiflora* in Brazil. The kernels of some resemble sweet-almonds, as those of *parinarium campestre* and *P. montanum.* A useful oil is expressed from the seeds of *princepia utilis*, a spiny plant, common in parts of the Himalaya Mountains, also planted for hedges in the Khasia hills, 5,725 ft. above the sea; while in Sikkim, it is found only where the elevation is above 8,000 feet.

CHRYSOBERYL, n. *krĭs'ō-bĕr'ĭl* [Gr. *chrusos*, gold; and Gr. *berullos;* L. *beryllus*, beryl]: gem almost as hard as



**Right rhomboidal prism; primary form of Chrysoberyl.**



**A crystal composed of six twins, grouped together laterally, which in transmitted light appears red. From Siberia.**

sapphire, and the finer specimens of which are very beautiful, particularly those which show an opalescent play of

light. Lapidaries sometimes call it oriental or opalescent chrysolite. It is of a green color, inclining to yellow, semi-transparent, or almost transparent, and has double refraction. It occurs crystallized in six-sided prisms; often in macles, or twin crystals. It is found in granite, in sandstone, and in alluvial soil; in Ceylon, Pegu, Siberia, Brazil, and Connecticut. It is composed of alumina, glucina, and a little protoxide of iron, the alumina being about 80 per cent of the whole.

CHRYSOCOLLA, n. *krĭs'ō-kŏl'lă*, called also COPPER-GREEN [Gr. *chrusos*, gold; *kolla*, glue]: hydrous silicate of copper; found in Cornwall and in many parts of the world, but particularly in Wisconsin and Missouri, where it is so abundant as to be worked for copper. As a pigment it was much used by the ancients.

CHRYSOLITE, n. *krĭs'ō-līt* [Gr. *chrusos*, gold; *lithos*, a stone]: silicate of magnesia and iron, composed of silica, magnesia, and protoxide of iron; of a fine green color, with vitreous lustre; transparent, and having double refraction; in hardness about equal to quartz; and with conchoidal fracture. It often crystallizes in four-sided or six-sided prisms, variously modified. Very fine specimens are brought from Egypt and from some parts of the east; also from Brazil. C. is used by jewellers as an ornamental stone, but is not highly valued. *Olivine*, which occurs generally massive, in grains and roundish pieces, and is frequent in volcanic countries, and found in the igneous rocks of some parts of Scotland—as on Arthur's Seat—is regarded as a coarse variety of chrysolite. The chrysoberyl (q.v.) is sometimes called C. by jewellers.

CHRYSOLORAS, *krĭs-ō-lō'ras*, MANUEL: learned Greek, of Constantinople; b. middle of 14th c.; d. 1415. He is regarded as the first who transplanted Greek literature into Italy. About 1391, the Byzantine emperor, John Palæologus, sent C. to England and Italy to entreat assistance against the Turks. This mission made C. known in Italy, and in 1397, he left his native land and went to Florence, where, as a teacher of Greek literature, he was highly esteemed and admired. Leonardo Bruno, Poggius, Philelphus, Guarinus of Verona, and other eminent scholars were his pupils. He was afterward employed in public services—especially in mediating a union of the Greek with the Roman church—by Pope Gregory XII. In 1413, C. went with John XXII. to the council of Constance, where he died. Besides theological works, his *Erotemata*, or 'Accidence of the Greek Language' (Venice 1484), has been preserved. Manuel C. must be distinguished from his nephew, John C., who also went to Italy and gave lessons in Greek.

CHRYSOMELA and CHRYSOMELINÆ: see GOLDEN BEETLE.

CHRYSOPHANIC ACID, n. *krĭs'ō-făn'ĭk ăs'ĭd* [Gr. *chrusos*, gold; *phaino*, I appear]: an acid of the alizarine series contained in rhubarb; a yellow coloring matter, also called *parĭĕtin* found in the plant *Pamĕtĭă parĭĕtīna*.

CHRYSOPHYLL, n. *krĭs'ŏ-fĭl* [Gr. *chrusos*, gold, *phullon*, a leaf]: the golden-yellow coloring matter in many plants and their flowers.

CHRYSOPHYLLUM: see SAPOTACEÆ: MONESIA BARK: STAR APPLE.

CHRYSOPRASE, n. *krĭs'ō-prāz* [Gr. *chrusos*, gold; *prason*, a leek]: merely a variety of chalcedony, but valued far above common chalcedony as an ornamental stone; so that a stone of this kind, fit for mounting in a ring, is worth from $50 to $100. It is of a fine apple-green color in choice specimens, but inferior ones exhibit other shades of green, and it is sometimes spotted with yellowish-brown. It is often set in a circlet of diamonds or pearls. Unfortunately, it is apt to lose its color through time, particularly if kept in a warm place; but dampness is favorable to its preservation, and it is therefore sometimes kept in damp cotton. It is found in Lower Silesia—where the search for it was particularly encouraged by Frederick the Great—and in Vermont. The inferior specimens are made into brooches, necklaces, etc., and those still coarser, into snuff-boxes, seals, cups, etc. The C. of the ancients was a stone of yellowish-green color, but it is not certain what it was.

CHRYS'OPS: see CLEG.

CHRYSOSTOM, *krĭs'os-tom*, or *krĭs-os'tom*, JOHN [Gr. *Chrysostomos*, golden-mouth; so named from the splendor of his eloquence]: 347–407, Sep. 14; b. Antioch. His mother; Anthusa, was a pious woman, wholly devoted to her son, who grew up under her loving instructions into an earnest, gentle, and serious youth, passing, as Neander significantly observes, through none of those wild, dark struggles with sinful passions which left an ineffaceable impress on the soul of Augustine, and gave a sombre coloring to his whole theology. He studied oratory under Libanius, a heathen rhetorician; soon excelled his teacher, and, after devoting some time to the study of philosophy, retired to a solitary place in Syria, and there read the Holy Scriptures. The ascetic severity of his life and studies brought on an illness which forced him to return to Antioch where he was ordained deacon by bp. Meletius, 381, and presbyter by bp. Flavianus, 386. The eloquence, earnestness, and practical tone of his preaching excited the attention of Jews, heathens, and heretics, and secured for him the reputation of the chief orator of the Eastern Church. In 397, the eunuch Eutropius, minister of the emperor Arcadius, who had been struck by the bold and brilliant preaching of C., elevated him to the episcopate of Constantinople. C. immediately began to restrict the episcopal expenditure in which his predecessors had indulged, and bestowed so large a portion of his revenues on hospitals and other charities that he gained the surname of 'John the Almoner.' He also endeavored to reform the lives of the clergy, and sent missionaries into Scythia, Persia, Palestine, and other lands. His faithful discharge of his duties, especially in reproof of vices, excited the enmity of

the patriarch Theophilus and of the empress Eudoxia, who succeed in deposing and banishing him from the capital. He was soon recalled, to be banished again shortly afterward. He now went to Nicæa, in Bithynia; but was thence removed to the little town of Cucusus, in the desert parts of the Taurus Mountains. Even here his zeal was not abated. He labored for the conversion of the Persians and Goths in the neighborhood, and wrote the 17 letters (or rather moral essays) to Olympias, to whom he also addressed a treatise on the proposition—'None can hurt the man who will not hurt himself.' The emperor, enraged by the general sympathy expressed toward C. by all true Christians, gave orders that he should be more remotely banished to a desolate tract on the Euxine, at the very verge of the eastern Roman empire. Accordingly, the old man was made to travel on foot, and with his bare head exposed to a burning sun. This cruelty proved fatal. C. died on the way at Comanum, in Pontus, blessing God with his dying lips. The news of his death excited much sorrow among all pious Christians, for C. was a man who drew the hearts of his fellows after him; a lovable, manly Christian, hating lies, worldliness, hypocrisy, and all manner of untruthfulness, with that honest warmth of temper which all vigorous people relish. A sect sprang up after his death, or martyrdom as they conceived it, called *Johannists*, who refused to acknowledge his successors; nor did they return to the general communion till 438, when the abp. Proclus prevailed on the emperor Theodosius II. to bring back the body of the saint to Constantinople, where it was solemnly interred, the emperor himself publicly imploring the pardon of heaven for the crime of his parents, Arcadius and Eudoxia. The Greek Church celebrates the festival of C, Nov. 13; the Roman, Jan. 27. In his *Homilies* (Thomas Aquinas said he would not give in exchange those on St. Matthew for the whole city of Paris) C. shows superior powers of exegesis. In general he rejects the allegorical system of interpretation, and adheres to the grammatical, basing his doctrines and sentiments on a rational apprehension of the letter of Scripture. He is, however, far from being a worshipper of the Bible. He recognized the presence of a human element in the Bible as well as a divine; and instead of attempting, by forced and artifical hypotheses, to reconcile what he thought irreconcilable in Scripture statements, he frankly admitted the existence of obscurities and difficulties in the sacred writings, and shaped his theory of inspiration accordingly. But his greatest and noblest excellence lay in that power, springing from the fervor and holiness of his heart, by which the consciences of the proud, the worldly, and the profligate were awakened, and all were made to feel the reality of the gospel message. The surname C. was first applied some time after his death, and, as is supposed, by the sixth œcumenical council, 680. C.'s works are very numerous, and consist of, 1st, *Homilies*, on parts of Scripture and points of doctrine; 2d, *Commentaries*, on the whole Bible (part of which has perished); 3d, *Epistles*, addressed to

various people; 4th, *Treatises*, on different subjects (such as Providence, the Priesthood, etc.); and 5th, *Liturgies*. Of these the most valuable, as well as the most studied, are the *Homilies*, which are held to be superior to everything of the kind in ancient Christian literature.

The most correct Greek edition of C.'s works is that by Henry Savil (8 vols., Eton, 1613), and the most complete Greek and Latin edition is that by Montfaucon (13 vols., Paris, 1718–38; republished 1834–40). The best authority in regard to C. is Neander, who, besides treating of his life and labors in his *Kirchengeschichte*, published a life of this eminent father.

CHRYSOTYPE, *krĭs'ō-tīp* [Gr. *chrysos*, gold; *typos*, impression]: photographic process invented by Sir John Herschel, depending for its success on the reduction of a persalt of iron to the state of protosalt by the action of light, and the subsequent precipitation of metallic gold upon this protosalt of iron. The process is conducted as follows: Good paper is immersed in a solution of ammonio-citrate of iron of such a strength as to dry into a good yellow color, without any tinge of brown in it. It is then exposed to light under a negative until a faint impression is obtained. A neutral solution of chloride of gold is then brushed over the paper, when the picture immediately appears, and is rapidly developed to a purple tint. It should then be freely washed in several changes of water, fixed with a weak solution of iodide of potassium, again thoroughly washed, and dried. The action of the iodide of potassium is to convert any unaltered chloride of gold into a soluble double iodide of gold and potassium, thus rendering the picture permanent.

CHUB, n. *chŭb* [Sw. *kubbug*, chubby, fat: Sw. *kubb;* Icel. *kubbr*, a block, a log: comp. F. *chevane*—from mid. L. *capĭto*], (*Leuciscus Cephalus*): plump river-fish, of the family *Cyprĭnidæ*, of the same genus with the roach, dace, bleak, minnow, etc.: see Leuciscus. The color is bluish-black on the upper parts, passing into silvery white on the belly; the cheeks and gill-covers rich golden yellow. The C.

Chub.

rarely attains a weight exceeding five lbs. It is plentiful in many rivers of England, and occurs in some of those of the s.w. of Scotland. In the rivers of Cumberland it bears the name of *Skelly*, supposed to have reference to the size of its scales; but the Schelly of Ullswater lake is the Gwyniad, and the C. is there called the *Chevin*. It is found in many rivers of the continent of Europe; being the *Jentling* or *Bratfisch* of the Danube, and the *Jese* of the Oder

It spawns in April and May. It is not in great esteem for the table.

The C. rises well at a fly, and takes freely a variety of baits. The same baits and the same means of fishing may be employed as for the barbel and bream. The C. is very fond, moreover, of slugs, grasshoppers, cockchafers, and humble-bees. The latter two are to be used either naturally, by means of dibbing or dapping, or, being imitated, may be used artificially, and cast as a fly. The best flies for the C. are large red, black, and brown palmers, with the hackles laid on thickly. The best places to fly-fish for C. are close under over-hanging boughs at the sides of streams, or against piles, or other places where they can get some shelter, for the C. is somewhat shy and easily alarmed. He is a bold riser, and when he comes at a fly seldom fails to hook himself. When first hooked, he makes a great dash, but he very soon gives in. Of all the baits for bottom-fishing, he prefers greaves, cheese, and worms, and the fatter the bait the better he likes it. He will occasionally run at a minnow, and is often taken on a spinning bait. The C. after spawning in May comes into condition again by the end of June or early in July; bites best, and is in the best condition for bottom-fishing, in Oct. and Nov. Some years ago, the scales of the C. were in much request, in common with those of the bleak, for artificial pearl-makers.

CHUBB, *chŭb.* THOMAS: 1679–1746; b. East Harnham, Wiltshire, England: rationalist writer on religious questions. He received but a meagre education in youth, and, after an apprenticeship to a leather glove and breeches maker in Salisbury, he became a tallow-chandler, in which business he continued to the end of his life. His first work, published 1715, was entitled *Supremacy of God the Father Vindicated.* Besides this, he wrote a multitude of treaties on other religious subjects. Among these may be mentioned: *A Discourse on Reason, as a sufficient Guide in matters of Religion; On Sincerity; On Future Judgment and Eternal Punishment; Inquiry about Inspiration of the New Testament; and Doctrine of Vicarious Suffering and Intercession Refuted.* This deistical writer shows some intellectual ability, and seems to aim at calmness and candor in argument, but lacked the learning and the training in logic to deal with the themes on which he wrote.

CHUBBY, a. *chŭb'bĭ* [Icel. *kubbr*, a stump: Sw. *kubb*, a stump, a short piece; *kubbug*, fat, plump]: short and thick; fat and plump. CHUB'BINESS, n. *bĭ-nĕs*, the state or quality of being chubby. CHUB-FACED, a. *-fāst*, having a plump, round face.

CHUCK, v. *chŭk* [F. *choquer*, to give a shock: Dut. *schokken*, to jolt; *schok*, a jolt: Wall. *caker*, to strike in the hand, to chatter: Turk. *chakil*, a pebble]: to give a slight blow under the chin so as to make the jaws snap; to throw or pitch a short distance; to strike gently: N. a slight blow, as under the chin; the part of a turning lathe for holding the material to be operated upon. CHUCK'ING, imp.

CHUCKED, pp. *chŭkt*. Eng. CHACK-STONE, Scot. CHUCKIE-STANE, a pebble. CHUCK-FARTHING, a toss farthing.

CHUCK, v. *chŭk* [an imitative word: F. *claquer*, to clack, to chatter (see CLUCK)]: to make the noise of a hen when calling her chickens: N. the noise or call of a hen to keep her chickens together; in *OE.*, a chicken—a word of endearment.

CHUCKLE, v. *chŭk'kl* [Icel. *koka*, or *quoka*, to swallow—from *kok*, or *quok*, the throat: Lith. *kaklas*, the neck: AS. *geagl*, the jaw, the chops: may be connected with either CHOKE, or CHUCK 2]: to laugh inwardly in triumph N. a broken, half-suppressed laugh. CHUCK'LING, imp. ADJ. a suppressed choking approaching to laugh, expressive of inward satisfaction. CHUCKLED, pp. *chŭk'kld*. CHUCKLE-HEADED, a. stupid; thick-headed; noisy and empty.

CHUCK-WILL'S-WIDOW, *chŭk'wĭlz-wĭd'ō* (*Antrostomus Carolinensis*): bird of the Goatsucker family (*Caprimulgidæ*), native of the southern parts of the United States It has received its singular name from its note, which resembles these words or syllables articulated with great distinctness, and is repeated like that of the cuckoo, or of its own congener, the Whip-poor-will (q.v.).

CHUCUITO, *chô-kwē'tō*, or CHUQUITO, *chô-kē'tō:* town of Bolivia, in the dept. of Puno, 100 m. e.n.e. of Arequipa, on the w. shore of Lake Titicaca, at the mouth of a stream flowing from the Andes. It was formerly of much greater size and importance than it is at present, having had, it is said, at the beginning of the 18th c.; the incredible number of 300,000 inhabitants. Pop. abt. 5,000. In the province of the same name, of which it is the capital, there are mines of silver and gold, and interesting antiquarian remains.

CHUFF, n. *chŭf* [It. *ciuffo*, the snout of an animal: F. *joufflu*, chubby, fat-cheeked: AS. *ceaflas*, chaps, jaws]: a churlish, surly man; a coarse, fat-cheeked fellow. CHUFFY, a. *chŭf'fĭ*, surly; churlish; coarse and blunt. CHUFFILY, ad. *chŭf'fĭ-lĭ*, in a surly manner. OLD CHUFF, a surly miser.

CHU-LAN: see CHLORANTHACEÆ.

CHUM, n. *chŭm* [a probable contraction of *comrade*, or *chamber*-fellow]: one who lodges in the same room; an intimate companion.

CHUMBUL, *chŭm'bŭl* or *chŭm-bŭl':* river rising in the Vindhyan Mountains, which form the s. limit of the basin of the Ganges. Its source at a height of 2,019 ft. above the sea, is in lat. 22° 26′ n., and long. 75° 45′ e. During a generally n.e. course of 570 m. it receives many tributaries on both sides, till, in lat. 26° 30′ n., and long. 79° 19′ e., it enters the Jumna from the right, with such a volume of water, that, when itself flooded, it has been known to raise the united stream seven or eight ft. in twelve hours. The C. is remarkable, here and there, for the wildness of its current and its picturesqueness.

CHUMP, n. *chŭmp* [an imitative word expressive of the

thick end of anything, as *chunk* and *hump:* Icel. *kumbr*, a log]: a thick, heavy piece of wood; a lump.

CHUNAM, n. *chô-năm':* Indian name for a very fine kind of quicklime made from calcined shells or from very pure limestone, and used for chewing with Betel (q.v.), and for plaster. Both recent and fossil shells are used for making Chunam. Extensive beds of fossil shells employed for this purpose occur in the s. of India, particularly in low, marshy situations near the sea-coast. The shells used are in the first place very carefully cleaned; they are then calcined in kilns, with wood charcoal. When chunam is to be used for plaster, it is mixed with fine river sand, and thoroughly beaten up with water. A little *jaggery* (coarse sugar) is also added. When very beautiful work is desired three coats of chunam are given to the wall, and the result is a plaster almost equal to marble in its polish and beauty.

CHUNAR-GHUR, *chŭn-âr'gėr*, India, a town, fortress, and invalid station in Hindustan, 17 miles southwest of Benares, on the Ganges. The fortress stands on a lofty rock rising abruptly from the river. Chunar was stormed by the British in 1764, and formally ceded to the East India Company in 1768. Pop, 12,000.

CHUNG-KING, *chŭng-kēng'*, China, a city in Szechuen on the Yang-tze-Kiang, at its junction with the Kia-ling. It was declared open in 1890, and has acquired a thriving trade. There was a rebellion of the natives here in 1896–8, which checked progress. A railroad to centre at Chung-King is projected, and valuable coal-mines are to be worked. Pop. about 125,000.

CHUPRAH, *chŭp-râ*, or CHAPRAH, India, a town of Hindustan, in Bengal, on the Gogra, near its junction with the Ganges, 32 miles west-northwest of Patna. It is narrow, but extends along the river for four miles. It has government courts and offices, government English school, and is a station of the German Lutheran Mission. Pop. (1901) 45,400.

CHUQUISACA, *chô-kē-sâ'kâ*, Bolivia, a department in the southeastern part of the country, bounded on the north by the department of Santa Cruz, on the east by Brazil, on the south by the department of Tarija, and on the west by the departments of Oruro and Potosi. Its area is variously estimated at from 40,000 to 73,000 square miles, the southern boundary of Bolivia not having been definitely determined. The eastern portion is mostly level, the mountainous parts being in the west. There are large forests and grazing lands, and the soil, where cultivated, is found good for agriculture. Mineral deposits exist, the most valuable being silver, of which some is mined. Among the other productions are wheat, coffee, sugar-cane, and cacao. The capital of the department, and also of the republic, is Sucre (q.v.). The population is about 285,000, embracing 80,000 civilized Indians and 8,000 whites, the rest being wild Indians.

CHURCH, n. *chẽrch* [Gr. *kuriăkon*, the Lord's house—from *kuriŏs*, the Lord; *oikos*, a house: AS. *cyrice:* Scot. *kirk:* Ger. *kirche*]: an edifice or a building consecrated or set apart for the worship of God; the collective body of Christians throughout the world; a certain number of Christians holding the same beliefs: V. to perform the office of returning thanks in church for women after childbirth. CHURCH'ING, imp.: N. attending church to offer thanks, as a women after childbirth; usage from an early period, apparently borrowed from the Jewish law, Lev. xii. 6; imperative in the Greek and the Roman Church, and having a plan in the liturgy of the Prot. Episc. Church. CHURCHED, pp. *chẽrcht.* CHURCH-ALE, a feast in commemoration of the dedication, of a church, at which much ale was used. CHURCH-LIKE, a. after the manner of a churchman, or becoming him. CHURCHMAN, n. an Episcopalian; a clergyman or member of an established church. CHURCH-MUSIC, music adapted for use in a church. CHURCH SERVICE, religious service in a church. CHURCH-GOER, a regular attendant at church. CHURCH MILITANT, the church on earth as warring against every form of evil. CHURCHWARDEN, n. *-wâr'dn* [Eng. *warden;* F. *gardien*, one who has the ward or guard of a thing]: in *Eng.*, and in the Prot. Episc. Chh. in the United States, an ecclesiastical officer, usually one of two in each parish, who, joined with the vestry, have charge of the church edifice, and of provisions for celebrating public worship, and of parochial interests generally: see CHURCH-RATES: PARISH: VESTRY. CHURCH-YARD, n. a burial-ground beside the church: see BURIAL: CEMETERY. *Note.*—The derivation of *church* from the Gr. is open to question, notwithstanding the high authorities in its favor. The word is found in the Teutonic and Celtic languages with the primary signification 'a circle of stones,' thus indicating the sites of the old heathen worship, on or near which Christian crosses and churches were erected in the earliest times. The more recent spellings, as well as the modern spelling, arose from the system of accommodation and corruption which prevailed before our language was fixed. Under the influence of the Greek, together with priestly instruction, it was easy for such a word to assume the northern forms, Dan. *kirke;* Sw. *kyrka;* Icel. *kirkja;* Scot. *kirk*, and the softer AS. form *cyrice.*

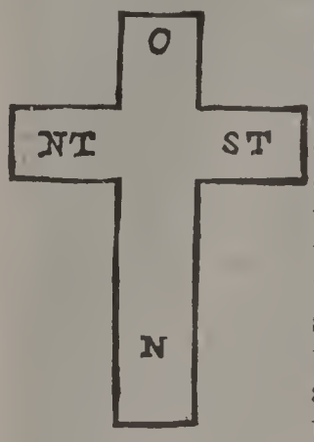
CHURCH [see CHURCH (preceding, with its note at the end]: word signifying either a place of Christian worship, or a collective body of Christian people. The earliest ecclesiastical structures of the Christians were copied or adapted not from the heathen or Jewish temple, as might have been anticipated, but from that peculiar combination of a hall of justice and a market-place to which the name basilica was given by the ancients: see APSE: BASILICA. The reason of this selection is found, probably not so much in the spirit of opposition which no doubt existed between Christians and heathens, as in the essentially different concep-

tions which they formed of the character and objects of public worship. The rites of heathendom were performed exclusively by the priest, the people remaining without the temple; and the temple itself, which was lighted only from the door, or by the few lamps which burned around the image of the god, was regarded not as an assembly room for worshippers but as the abode of the deity. The dark, mysterious character which thus belonged to it rendered it equally unsuitable for the performance of liturgical services in which the people were to participate and for the delivery of those public addresses which from the beginning were employed as a means of Christian teaching and exhortation. To such purposes the prætor's court-room, with its surroundings, were readily adapted, by the few simple alterations described in the articles above referred to. But the basilica, as thus altered, was a mere utilitarian structure. It served the purposes of Christian worship, but there was nothing in its form which responded to the feelings of Christian worshippers or tended to awaken Christian sentiments. Now, the cross (q.v.) had been used by Christians from a very early period to indicate their allegiance to the author of their salvation and the object of their faith; and gradually it had become the distinctive emblem of Christianity. Nothing, then, could be more natural than that when it became desirable to give distinctively Christian characteristics to what hitherto had been a heathen structure, this should be effected by such a modification of its form as should convert it into a representation of this sacred emblem. Nor did this alteration lead to any very extensive change on the form of the C., as it had hitherto existed. The basilica frequently had side entrances, either in place of, or in addition to, that from the end. All that was requisite, then, to change its simple parallelogram into a cross, was, that at each side of the building these entrances, in place of direct communications with the exterior, should be converted into passages, or arms running out at right angles, and more or less prolonged, according as the object was to attain the form of a Greek or of a Latin cross (see Cross). If the C. was to be in the form of a Greek cross the arms were made of the same length with the other two portions into which they divided the building; if the cross was to be a Latin one the portion of the building toward the west was made considerably longer than either of the others. In either case the arms running at right angles to the C., and directly opposite to each other, cut it across, and thus obtained the name of *transepts*.

The external form of the C. being thus indicated, the following were its internal arrangements, and the various adjuncts which in cathedrals and other of the larger churches frequently sprang up around it.

Over the point at which the arms or transepts intersect the body of the cross, a central tower or spire is very frequently erected. From this central tower or, if the tower or towers are situated elsewhere, from this central point, the portion of the building projecting westward, to

where the Galilee or entrance chapel, or, in other instances, the great entrance-door is situated, is called the nave (from *navis*, a ship), while the portion eastward to where the altar, or high-altar, if there be several altars, is placed, is called the choir. In the larger and more complete churches, the nave, frequently also the choir, are divided longitudinally by two rows of pillars into three portions, the portion at each side being generally somewhat narrower and less lofty than that in the centre. These side portions are called the aisles of the nave, or of the choir as the case may be. In some churches, the aisles are continued along the transepts, thus running round the whole church, in others, there are double aisles to the nave, or to both nave and choir, or even to nave, choir, and transept. Behind, or to the east of the choir, is situated the Ladye's Chapel, or Chapel of the Virgin, with sometimes a number of altars; and it is not unusual for side chapels to be placed at different points along the aisles. These usually contain the tombs of the founder, and of other benefactors to, or dignitaries connected with the church. The extent to which these adjuncts exist depends on the size and importance of the church, and they are scarcely ever alike in two churches, either in number, form or position. Vestries for the use of the priests and choristers are generally found in connection with the choir. Along the sides of the choir are arranged richly ornamental seats or stalls, usually of carved oak, surmounted with tracery, arches, and pinnacles and among these seats, in the case of a bishop's church, the highest and most conspicuous is the so-called *cathedra*, or seat for the bishop, from which the cathedral takes its name. The larger English cathedral and abbey-churches have usually a chapter-house attached, of various forms, usually octagonal, and often one of the richest and most beautiful portions of the whole edifice. On the continent chapter-houses are not so common, the chapter (q.v.) being usually held in the cathedral itself or in one of the chapels attached to it. Cloisters (q.v.) also are frequent, and not unusually the sides of those furthest removed from the church, or chapter-house, are inclosed by other buildings connected with the establishment, such as a library, and places of residence for some of the officials of the cathedral. It is here that, in Rom. Cath. churches, the hall, dormitories, and kitchens for the monks are commonly placed. Beneath the church there is frequently a Crypt (q.v.). In some cathedral churches, the crypt is in reality a second underground church of great size and beauty. The baptistry (q.v.) is another adjunct to the church,



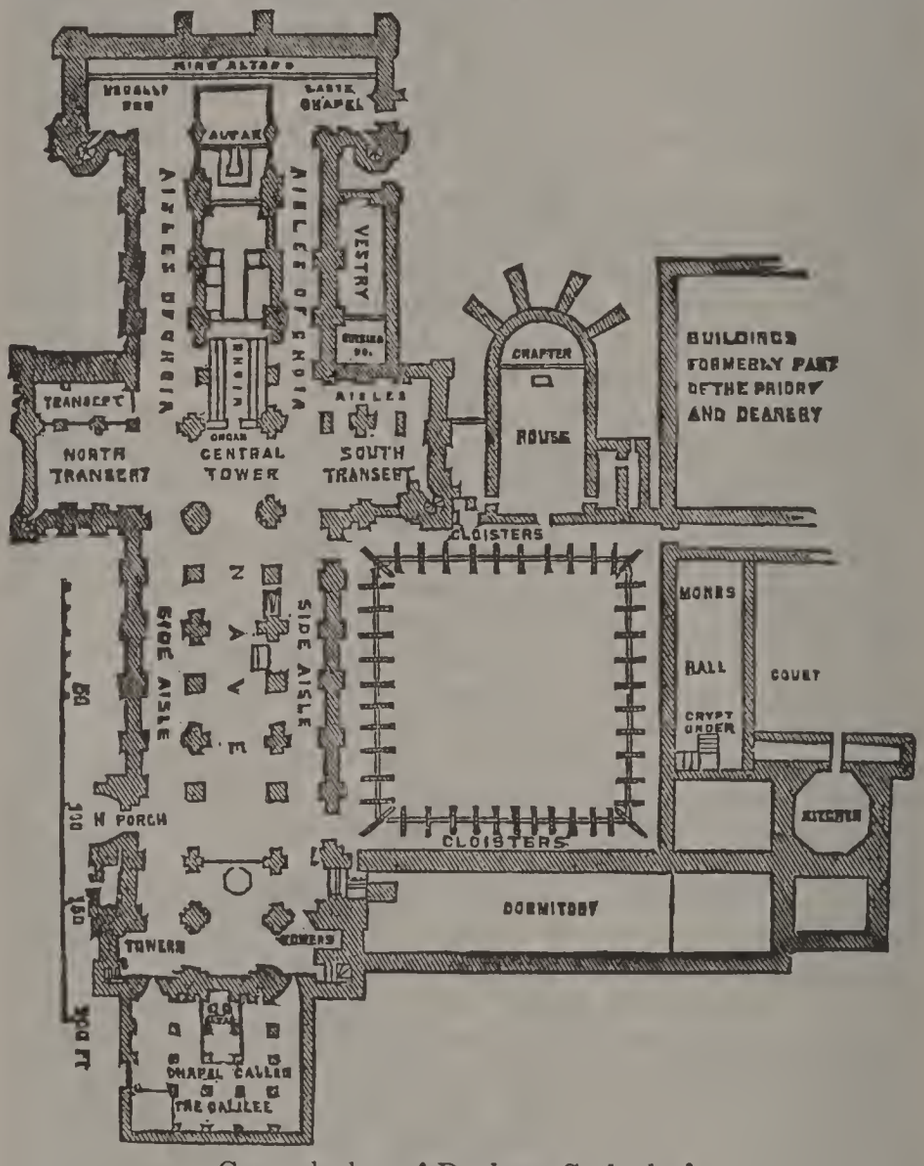

Church:
C=Choir; N.T.=North Transept; S. T. = South Transept; N. =Nave.

though frequently forming a building altogether detached. Most of the parts of the church above mentioned may be traced on the annexed ground-plan of Durham Cathedral; see, also, plans of the cathedrals of Salisbury and Amiens under GOTHIC ARCHITECTURE. The position of the nave, choir, or chancel, aisles, and transepts are nearly invariable, but the other portions vary, and are scarcely alike in two churches.

Churches are of five classes—metropolitan, cathedral, collegiate, conventual, and parish churches—and of these the first are, generally speaking, the most, and the last the least, elaborate. In ordinary language, any building set apart for religious ordinances is called a church, though when of a minor kind it is more usually designated a chapel. After a long period of neglect and poverty of taste, the building of churches in a superior style, emulative of the older styles of architecture, has greatly revived, not only in the Church of England, but in the Church of Scotland and nearly all dissenting bodies in Great Britain. The same return to ancient styles is noticeable among nearly all denominations in the United States.

As applied to a collective body of Christian people, the word church is the translation and equivalent of the Greek word *ecclesia* (Lat. *ecclesia*, Fr. *église*), used in the New Testament. This word, in classical usage, meant the assembly of the citizens called out or summoned; or sometimes a great gathering or throng of people, a company, a congregation. In the New Testament the word was applied by Christ and the apostles to those Christian disciples who in any city or village constituted a company in fellowship; also, collectively, to the whole body of Christ's disciples scattered throughout the world. It is common among Protestants to distinguish between the *visible* and the *invisible* Church—the invisible church consisting of all those who are savingly or spiritually united to Christ, that is, of all his true disciples, the visible church consisting of all who profess the religion of Jesus Christ. Roman Catholics do not in the same manner acknowledge the distinction between the visible and the invisible church, but regard a connection with the hierarchy, and consequent participation of ordinances, as establishing a connection with the true church and with Christ. Protestants regard the church as subsisting from age to age, in virtue of the authority of Christ, and through the faith of individual disciples which is wrought in them by the Holy Spirit and testified to by their confession of Christ; Roman Catholics regard the apostolical succession of the hierarchy, and the regular administration of the sacraments, as essential to the continued existence of that *Catholic* or universal church which Christ planted on the earth, and the existence of which he has promised to maintain throughout all ages. Protestants in general regard the Catholic Church and the Greek Church as forming part of the visible church of Christ, but Roman Catholics are not accustomed to make a corresponding admission with respect to the Prot-

estant churches. From the hierarchical principle of the Catholic Church and of the Greek Church, results an employment of the term church to designate the hierarchy alone, which is contrary to the principles of the Reformation, although a tendency to it may be observed in some Protestant churches. It has been usual for Protestants to designate by the term church the collective body of Christians in a particular country, distinguished by the name of that country; the greater number of Protestants




Ground-plan of Durham Cathedral.

(Episcopalians and Presbyterians) believing that such a portion of the universal Church may warrantably be associated under a common government; and in countries where religious liberty exists, diversities of opinion on points of doctrine and church government have given rise to the existence of separate Christian associations, distinguished by names generally indicative of some of the peculiarities which characterize them; but these, however much they may differ on many points, do not in general hesitate to recognize each other as belonging to the univer-

sal visible church of Christ, while they retain in common the same great first principles of the Christian faith, and particularly the belief in the Father and the Son and the Holy Spirit—one God, the incarnation of the Son of God, the atonement by Jesus Christ, and the work of the Holy Spirit. The term church, however, is regarded by Independents or Congregationalists (q.v.) as strictly limited, by its use in the New Testament, to these two applications: (1) to those disciples who are or may be united as worshippers in a particular place of worship, partaking of the Lord's Supper together, and administering the fellowship, truth and order of Christ among themselves; and (2) to the church general, the whole body of Christ's disciples scattered throughout the world.

CHURCH, *chêrch*, ALBERT E., American mathematician and military officer: b. Salisbury, Conn., 1807; d. West Point, N. Y., 1878, March 30. He was educated at West Point and was professor of mathematics there 1834–78. His mathematical works include *Elements of Differential and Integral Calculus* (1842); *Elements of Analytical Geometry* (1851); *Analytical Trigonometry* (1857); *Elements of Descriptive Geometry* (1865).

CHURCH, ALFRED JOHN, English translator and author: b. London, 1829, Jan 29. He was educated at Lincoln College, Oxford; was ordained in the English Church in 1853, and after holding several head masterships, was professor of Latin in University College, London, 1880–8; and rector of Ashley, Gloucestershire, 1892–7 Beside publishing translations of Tacitus and Livy, he is the author of *Stories from Homer* (1887); *Stories from Virgil* (1878); *A Traveler's True Tale, after Lucian* (1879); *Stories from the Greek Tragedians* (1879); *Stories from the East* (1880); *The Story of Jerusalem* (1880); *The Story of the Persian War* (1881); *Stories from Livy* (1882); *Roman Life in the Days of Cicero* (1883); *The Chantry Priest of Barnet* (1884); *With the King at Oxford* (1885); *Two Thousand Years ago, or the Adventures of a Roman Boy* (1885); *Carthage* (1887); *The Count of the Saxon Shore* (1887); *Three Greek Children* (1888); *To the Lions* (1889); *Burning of Rome* (1891); *Pictures of Roman Life and Story* (1892); *Early Britain*; *Bacon*; *Callias*; *Heroes of Chivalry*; *Lords of the World*; *Helmet and Spear*; *Spencer*; etc. His books have been widely read in America.

CHURCH, ARTHUR HERBERT, English chemist: b. London, 1834, June 2. He was educated at King's College, London, the Royal College of Chemistry, and Lincoln College, Oxford. He was professor of chemistry in the royal Agricultural College, Cirencester, 1863–79; and has filled the same position in the Royal Academy of Arts from 1879. He is the discoverer of the animal pigment known as turacin, and of churchite, a native cerium phosphate, and has published *Precious Stones* (1883); *English Earthenware* (1884); *The Laboratory Guide* (7th ed. 1894); *Food* (16th thousand, 1901); *Josiah Wedgewood*

(1894); *Color*; *Guide to Corinium Museum*; *Chemistry of Paints and Painting* (3d ed. 1901); etc.

CHURCH, Benjamin, American soldier: b. Duxbury, Mass., 1639, March; d. Little Compton, R. I., 1718, Jan 17. He commanded forces with distinction in King Philip's war and in the famous battle of 1675 with the Narragansetts won renown. He captured and executed King Philip in 1676. *Entertaining Passages Relating to King Philip's War* were compiled from his notes by his son Thomas.

CHURCH, Benjamin, American physician: b. Massachusetts about 1710; d. 1776. He was graduated at Harvard; became noted for his patriotic writings during the decade preceding the Revolutionary War, and was a leader in the 'Boston tea-party.' He secretly corresponded in cipher with the British, and, being detected, failed to exculpate himself. He was lost at sea while on a voyage to the West Indies.

CHURCH, Francis Pharcellus, American editor: b. Rochester, N. Y., 1839, Feb. 22; d. New York City, 1906, April 11. He was the first publisher and editor of the *Army and Navy Journal*; afterward, with his brother, he established and edited the *Galaxy* magazine. He was a leading editorial writer on the New York *Sun*, and till his death was a proprietor of the *Army and Navy Journal*. He published *Life of Ulysses S. Grant* (1899); and *Life of John Ericsson* (1891).

CHURCH, Frederick Edwin, American landscape painter: b. Hartford, Conn., 1826, May 4; d. New York, 1900, April 7. His earliest productions were views of the Catskill Mountains, among which he resided, and a view of East Rock, near New Haven, which attracted very favorable notice. In 1855 he visited South America, and found in the magnificent scenery of that country materials for several of his most admired pictures. After his return he executed his *View of Niagara Falls from the Canadian Shore*, regarded by many as the most successful representation of the great cataract. Among his other works are *The Heart of the Andes*; *Cotopaxi*; *Morning on the Cordilleras*; *Under Niagara*; *The Icebergs*; and *Sunrise on Mount Desert Island*. After a visit to the Holy Land in 1868 he painted *Damascus* (1869); *Jerusalem* (1870); *The Parthenon* (1871).

CHURCH, Frederick Stuart, American Artist: b. Grand Rapids, Mich., 1842. He studied at the National Academy of Design, and since 1885 has been a full member thereof. He has achieved note as a realist and is well known as a painter of figures and animals.

CHURCH, George Earl, American soldier, engineer and explorer: b. New Bedford, Mass., 1835, Dec. 7. He was a member of the Scientific Exploring Expedition in South America in 1858; served in the Army of the Potomac 1862–5; and was war correspondent in Mexico for the New York *Herald* 1866–7. He made explorations in South

America 1868–72; was United States commissioner to visit and report on Ecuador 1880; represented American Society of Civil Engineers at London Congress of Hygiene and Demography in 1891, and was president of the Geographical Society of the British Association in 1898.

CHURCH, Irving Porter, American civil engineer; b. Ansonia, Conn., 1851, July 22. He was educated at Cornell University and has been professor of applied mechanics and hydraulics in the College of Civil Engineering there, from 1892. He has published *Statics and Dynamics for Engineering Students* (1886); *Mechanics of Materials* (1887); *Hydraulics and Pneumatics* (1890); *Notes and Examples in Mechanics* (1892); *Diagrams of Mean Velocity of Water in Open Channels* (1902); etc.

CHURCH, John Adams, American mining engineer; b. Rochester, N. Y., 1843, April 5. He was graduated from the Columbia School of Mines in 1867, was professor of metallurgy in Ohio State University 1878–81, and was four years in the service of Li Hung Chang in Mongolia, engaged in developing silver mines. He has published *Notes on a Metallurgical Journey in Europe*; *The Comstock Lode*; *Report on Artesian Wells in Arizona.*

CHURCH, Richard William, English clergyman; b. Lisbon, 1815, April 25; d. London, 1890, Dec. 9. He took a first-class at Oxford in 1836, and soon after was elected to a fellowship at Oriel. From 1853 to 1871 he held the rectory of Whatley, near Frome. In 1871 he became dean of St. Paul's Cathedral, London. In 1854 he published *Essays and Reviews*, and thereby took rank almost at once as one of the most graceful and scholarly writers of the day. His university sermons *Human Life and its Conditions* (1878); *The Gifts of Civilization* (1880); and *The Discipline of the Christian Character* (1885), are profound contributions to religious thought. Other works by him are *Life of Anselm* (1871); *The Beginning of the Middle Ages* (1877); *Dante: an Essay* (1878); *Spenser* (1879); *Bacon* (1879); *The Oxford Movement* (1891); *Miscellaneous Essays.*

CHURCH, Samuel Harden, American writer: b. Caldwell County, Mo., 1858, Jan. 24. He is a railway official in Pittsburg, Pa., and has written *Oliver Cromwell: a History* (1874); *John Marmaduke*, a romance (1897); *Corporate History of the Pennsylvania Lines West of Pittsburg* (1898–1901); *Beowulf* (1901); *Moses, a Memoir*; *Washington and His Country*; *Penruddock of the White Lambs*; *The Brayton Episode* and *The Sword of the Parliament*, plays.

CHURCH, States of the: see Papal States.

CHURCH CONGRESS: a gathering of bishops, clergy, and laity of the Church of England, or of the Prot. Epis. Church in the United States, convened annually for the free discussion of questions of interest and importance. The first was held at Canterbury, England, 1861; the Church Congress has since met in various cities, with large attendance and happy results. The first American Church Congress met in New York 1875. The C. has outlived

opposition, and proved itself certainly innocuous, and it is believed, beneficial.

CHURCH DIET: a German religious assembly (see DIET). The old assemblies of the states were applied in Reformation times to the attempted regulation of ecclesiastical affairs, and diets were held at Worms 1521, at Nuremberg 1523, 24, at Spires 1526, 29, at Augsburg 1530, 47, 48, 50, and at Ratisbon 1541, 46, and 57.—After the revolutionary movements of 1848, which were thought to endanger the cause of religion, free gatherings of ministers and laymen of the Lutheran, Reformed, and United Evangelical bodies arose, and have since been continued annually, with published reports of each. At first the high, rigid, or extreme Lutherans joined with the others, but since 1860 the more pronounced Protestant or 'evangelical' parties have conducted the diet.

CHURCH DISCIPLINE (*Disciplina ecclesiastica*): all the means employed by the Christian Church, besides the ministration of the divine word and the ordinances of Christ, to secure on the part of its office bearers and members a faithful adherence to their profession and a corresponding blamelessness of life. It rests upon the authority of Christ, and at the same time necessarily arises, in some form of it, out of the very constitution of the church as a society. Among the early Christians it soon assumed forms of great severity toward offenders, especially toward the *Lapsed* (q.v.). At a later period, the discipline of the church was exercised chiefly with respect to persons accused of heresy and schism. The penances of the Church of Rome have long formed an important part of its discipline, and therewith its *Indulgences* (q.v.) are closely connected, as well as its doctrine and rule of *Auricular Confession* (see CONFESSION). In the Protestant churches, public confessions of sins by which public scandal has been given, and submission to public rebuke, are sometimes required. Practices more analogous to those of the primitive church were established in many churches after the Reformation, but in general have fallen greatly, or entirely into disuse. The power of exclusion from the Lord's Supper, and from the rights and privileges of church membership, is, however, generally retained and exercised, until, by profession of repentance, and by reformation of life, the cause of such exclusion is removed; and ministers or other office-bearers are, upon offense given in their doctrine or conduct, suspended from their functions, or altogether deposed from their ministry. The exercise of C. D. belongs more or less exclusively to a hierarchy, or to the office-bearers assembled in church-court, or to the members of each congregation, according as the church is Episcopalian, Presbyterian, or Congregational in its church-government. There is an increasing tendency among Christians in general to scrutinize closely the claim of right to exercise C. D., and the limits within which it may be exercised.

CHURCH GOVERNMENT: ecclesiastical constitution

and rules. The Christian Church, like every other society, must have a certain constitution and rules according to which its affairs are administered. It is disputed, however, among Christians, how far this constitution has been defined, or these rules prescribed by divine authority, and how far they have been left to the discretion of men; and among those who find an authoritative system of C. G. laid down in the New Testament, there is debate as to the principles of the system there shown. The form of C. G. depends primarily on the idea entertained of the constitution of the church. Congregationalists (q.v.), including Baptists, and others of differing denominations, with like views of church polity, tend by their principles to reduce C. G. to a simple fellowship of the church in administering the government of Christ alone; which administration they consider as the duty of the members of each congregation of disciples—such congregation being led therein by the bishops (or pastors) whom they elect. Episcopalians and Presbyterians agree that many congregations are to be united under a common government; but, according to Presbyterians, this is properly carried on by ministers and elders of all these congregations in a certain district, or region, or nation, meeting for this purpose on a footing of equality; while, according to the Episcopalians, the government is more or less absolutely in the hands of bishops, who are considered as forming an order in the ministry superior to the mere pastors of congregations: see EPISCOPACY: PRESBYTERIANISM: CONGREGATIONALISM.

It is increasingly evident that the real differences as to church organization consist not in the mere adoption of one of these three modes and the rejection of the other two, so much as in deep convictions or fervent feelings on certain points of doctrine, such as the grace in sacraments, or the indispensableness of an authoritative system of orthodox intellectual beliefs, or the nature of the sin of schism, or the necessity of keeping a traceable historic connection with the church of all the past. The evidence of this is seen in the fact that under almost every form of church organization, the three modes—Episcopal, Presbyterial, Congregational—are always essentially present and often recognized, each as a needful check on the others.

CHURCH HISTORY, or ECCLESIASTICAL HISTORY: one of the most important parts of the general history of mankind; intimately connected not only with the political history of the world but with the history of philosophy, of literature, and of civilization. The sources and authorities are extremely various, and their due appreciation often requires as much judgment as their exploration requires toil. C. H. is either general—embracing a view of the affairs of the church in the whole world from the beginning to the present day—or particular, relating to some particular country, or period, or portion of the church. By some authors it has been treated chiefly with regard to the outward affairs of the church; and by others, with reference to doctrine, morals, and the evidences of spiritual life; while others still have devoted

their attention chiefly to the forms of worship, the constitution of the church, and other things generally comprehended under the name of ecclesiastical antiquities. All these, of course, have important relations to each other. The earliest writers of C. H. were in general mere chroniclers, following the order of time. In the great work of the Magdeburg centuriators, a method was adopted, of which there had been previous examples, and which afterward became frequent, of treating each century separately, the centuries being subdivided according to convenience of subjects; but arrangements less mechanical and arbitrary have been adopted by the most eminent modern authors. With much diversity on minor points, there is general agreement in dividing the whole history of the church into three great periods: the first, from our Savior to the time of Constantine; the second, from that time to the Reformation; and the third, from the Reformation to the present day.

The earliest facts of C. H. are to be learned only from the New Testament, after which, however, the epistles and other writings of the apostolic and other primitive fathers, afford sources of information, unfortunately, very scanty. Hegesippus, who wrote about the middle of the 2d c., has transmitted to us some very imperfect memorials of these early times; but the first proper ecclesiastical history is that of Eusebius of Cæsarea (324). This work was continued to the 5th c. by Socrates Scholasticus, Hermias Sozomenus, and Theodoret. Similar compilations were executed by Lactantius, Epiphanius, Hieronymus, Theodoret of Cyrus, Philostorgius, and Zosimus. In the 6th c. the ecclesiastical historians are: Theodorus Lector, Evagrius, and Nicephorus Callistius; in the 8th the venerable Bede and Paul Warnefried; in the 9th Theophanes Confessor, Claudius of Turin, Haymo of Halberstadt, Scotus Erigena, and Hinkmar of Rheims; in the 12th and 13th, Photius, Simeon Metaphrastes, Theophylact, Matthew Paris, Albert of Strasburg, and Ptolemy of Lucca; in the 15th Laurentius Valla is the most conspicuous name. Protestant writers were the first to treat C. H. in a critical and scientific manner. This was natural, for their position as apparent schismatics compelled them to vindicate historically the changes to which they had wrought in the character of the church. Hence their writings were of an apologetic and polemical cast. The first work of this kind was the *Magdeburg Centuries* (q.v.), published by Matthias Flacius. Special histories of the Reformation were composed by Sleidan and Seckendorf. In the 17th c. Calixtus distinguished himself in this department, and after him Thom. Illig, Adam Rechenberg, and Thomasius. The new life that awoke in Germany toward the middle of the 18th c. produced a multitude of church-historians, notably Arnold, C. M. Pfaff, Mosheim, Semler, and J. Matth. Schröckh; while in still more recent times, Marheineke, Danz, Neander, Gieseler, Hagenbach, and Kurtz, have achieved the highest distinction in the same sphere of labor. But others besides the Lutheran divines have ren-

dered valuable services to church history. The Reformed Church boasts the eminent names of Du Moulin, Joh. Daläus, Blondel, Hottinger, Spanheim, Turretin, Venema, Jablonski, and recently, D'Aubigné; while among Englishmen, Usher, Pearson, Bingham, Lardner, and recently Milman and Maurice, have won a distinguished place. Scotland has few names, the chief being Calderwood, Wodrow, McCrie, and recently Cunningham. In the Rom. Cath. church, since the Reformation, ecclesiastical historians have rarely aimed at a philosophic spirit, but have appeared mainly in the character of defenders of the papacy. The greatest names in C. H. in Rom. Cath. France are Tillemont, Bossuet, Bayle, Du Pin, Thomassin, and Fleury. Among Italians may be mentioned Orsi, Saccharelli, Pallavicini, Guicciardini, and Muratori; and among the Roman Catholics of Germany, Dannemayr, Count Stolberg, Ritter, Hortig, and Döllinger. The method of F. C. Baur (q.v.), developed by him especially with regard to the first three centuries of the Christian Church, has deeply influenced all subsequent writing of church history. Recently the best works have been monographs and histories of limited periods.

CHURCHILL, *chĕrch'il*, CHARLES: English poet, now remembered almost as much for his profligacy as for his poetry; 1731–1764, Nov. 4; b. Westminster; where his father was a curate. He was educated at Westminster school, and in his 17th year made a clandestine marriage. In 1756, he was ordained, and two years afterward succeeded his father as curate of St. John's, Westminster. Soon after his transference here, he fell into habits very ill-becoming his clerical character. In 1761, he published (at his own risk, the booksellers having refused him five guineas for it) *The Rosciad*, a satire on theatrical managers and performers, which displayed much critical acumen, clever sarcasm, and no little humor, and had such immense success that C., who on its publication had withheld his name, was soon delighted to avow himself author. In the same year appeared *The Apology*, a bitter satire on some of his critics, which added alike to his purse and his notoriety. He now totally neglected the duties of his office, was a constant attender at theatres, and altogether led a most dissolute life. His parishioners were scandalized, and his dean remonstrated, whereupon C., to show his utter contempt for the ministerial profession, appeared in a blue coat, gold-laced hat and waistcoat, and large ruffles. He was obliged, however, to resign his preferment, which pecuniary sacrifice was little, as his works brought him considerable sums. He further displayed the complete licentiousness of his nature by separating from his wife, and seducing the daughter of a tradesman in Westminster, and by endeavoring to excuse his vices in a poem called *Night*, on the ground that avowed profligacy was more harmless than profligacy practiced in concealment. The boon-companion of as great a debauchee as himself—Wilkes—he contributed to the pages of the *North Briton*, among other things, *The Prophecy of Famine*, *A Scots Pas-*

*toral*, one of the best of his satires. He is almost without a peer in his special field.

CHURCHILL, John, Duke of Marlborough. See Marlborough.

CHURCHILL, Randolph Henry Spencer, Lord, English statesman, third son of the 7th Duke of Marlborough: b. 1849 Feb. 13; d. London, 1895, Jan. 24. He was educated at Merton College, Oxford, and having entered parliament in 1874 as member for Woodstock, by 1884 he had risen to the position of a recognized leader of the Conservative party, and in 1885 became Indian secretary in Lord Salisbury's government. His tenure of this office was rendered notable by the annexation of Upper Burma. On the defeat of Gladstone's Irish bill in 1886 Churchill became leader of the House of Commons and Chancellor of the Exchequer, posts which he unexpectedly resigned in December 1886. He was a brilliant though at times rather violent personality in British politics. His opinions were mainly Conservative, but he often found himself in opposition to the official leaders of that party; and for some time he acted as the leader of what was known as the Fourth Party, consisting of four members who adopted a somewhat independent position. He married in 1874 Jennie Jerome, a daughter of Leonard Jerome, of New York. In July 1900, Lady Randolph Churchill married George Cornwallis West.

CHURCHILL, Winston, American novelist: b. St. Louis, Mo., 1871, Nov. 10. He was graduated from the United States Naval Academy in 1894, and became an editor of the *Army and Navy Journal* the same year. After serving as managing editor of the *Cosmopolitan* magazine, he turned his attention to fiction. He has written: *The Celebrity* (1898); *Richard Carvel* (1899); *The Crisis* (1901); *Mr. Keegan's Elopement; The Crossing* (1904); *Coniston* (1905).

CHURCHILL, Winston Leonard Spencer, English soldier and author: b. 1874, Nov. 30. He was educated at Harrow and Sandhurst Military College. He served with the Spanish forces in Cuba, and in the English army during part of the Boer war 1899–1900. In 1905 he became Under Secretary for the colonies in the Liberal Cabinet. Since 1900 he has represented Oldham in parliament. He became privy councillor 1907, Apr. 24. He has published *The Story of the Malakand Field Force* (1898); *The River War* (1899); *Savrola* (1900); *London to Ladysmith, via Pretoria* (1900); *Ian Hanilton's March* (1900).

CHURCHILL RIVER, a river of the Northwest Territories of Canada, which rises in La Crosse Lake, forms or passes through various lakes or lake-like expansions, the largest being Big or Indian Lake, and enters Hudson Bay near Fort Churchill, after a northeasterly course of about 800 miles. It is called also Missinnippi, English and Beaver. Except by means of frequent portage, it is not navigable.

CHURCHING OF WOMEN, a rite founded on the Mosaic injunction found in Lev. xii. 6-8, and as practised in some denominations, is now a giving of thanks for the birth of a child. The first mention of the subject as a usage in the Christian Church is found in the pseudo-nicene Arabic Canon, but no prescribed form is given. In the Greek Church the presentation of the child is made on the 40th day after birth, according to Luke ii. 22. The Roman Catholic Church imposes no obligation upon its members in this respect, but recommends it as a laudable and pious custom. The form is prescribed by the Roman Catholic ritual. The priest sprinkles with holy water the woman who kneels at the altar-railing and holds a lighted candle, and having recited the 23d Psalm, he puts the end of his stole into her hand and says: 'Come into the temple of God; adore the Son of the Blessed Virgin Mary, who has given thee fruitfulness in child-bearing.' The priest then says a prayer of thanksgiving, blesses her, and sprinkles her with holy water in the form of a cross. The rubric of the Roman Catholic ritual reserves this rite for women who have children born in wedlock. The Anglican Church provides in the prayer book a prescribed form for the ceremony. The Congregational, Presbyterian and other churches either ignore, or declare that there is no scriptural warrant for the rite.

CHURCH OF ENGLAND: see ENGLAND, CHURCH OF.

CHURCH OF GOD: see WINEBRENNARIANS.

CHURCH RATES, in England: tax or assessment laid on the parishioners and occupiers of land within a parish, by a majority of their own body in vestry assembled, for the purpose of upholding and repairing the fabric of the church and the belfry, the bells, seats, and ornaments, the church-yard fence, and the expenses (other than those of maintaining the minister) incident to the celebration of divine service. The parishioners are convened for this purpose by the church-wardens (q.v.). The chancel (q.v.) being regarded as belonging peculiarly to the clergy, the expense of maintaining it is laid on the rector or vicar, though custom frequently lays this burden also on the parishioners, as in London and elsewhere.

The Church Rates were anciently a charge on the tithes of the parish, which were divided into three portions: one for the structure of the church, one for the poor, and the third for the ministers of the church. This distribution is said to have originated with Pope Gregory, who enjoined St. Augustine thus to divide such voluntary offerings as might be made to his missionary church in England. A canon of Abp. Ælfric, 970, and an act of the Wittenagemote, 1014, in Ethelred's time, have been quoted in proof of the recognition of this rule by the Saxons of that age. It seems to have been their custom, also, to devote to the repair of each church a portion of the fines paid for offenses committed within the district attached to it; and every bishop was bound to contribute to the repair of his own church from his own means. A third of the tithes thus

originally devoted to the repairs of churches continued to be applied to that purpose under the Normans down to the middle of the 13th c.; and the manner in which this burden came to be shifted to the parishioners has been a subject of much discussion among legal antiquaries. Lord, then Sir John, Campbell, who published a pamphlet on the subject in 1837, is of opinion that the contributions of the parishioners were at first purely voluntary, and that the custom growing, it at last assumed the form of an obligation, and was enforced by ecclesiastical censures. The care of the fabric of the church, and the due administration of its offices are laid upon the ministers and the church-wardens conjointly, and the latter may be proceeded against by citation, in the ecclesiastical courts should they neglect these duties. But there is no legal mode of compelling the parishioners as a body to provide the rate, and this circumstance has occasioned much difficulty in imposing the tax in parishes in which dissent is prevalent, and led to many churches falling into a partially ruinous condition. The proper criterion for the amount of Church Rates is a valuation of the property within the parish, grounded on the rent that a tenant would be willing to pay for it. Glebe land, the possessions of the crown in the actual occupation of the sovereign, and places of public worship are not liable for Church Rates; but there is no other exception as regards immovable property, and in some parishes, custom even extends it to stock in trade. It has been often decided in the courts that a retrospective church-rate—i.e., a rate for expenses previously incurred—cannot be validly imposed. Much difficulty has been experienced in recovering the rates imposed by the parish on individuals refusing to pay. In 1868 an end was put to all parochial contentions by enacting that no suit or proceeding should thereafter be allowed in any court to enforce or compel payment of a church-rate, except where a local act authorized this rate. But except so far as related to the compulsory payment of these rates, the church-wardens might as before, make, assess, receive, and deal with such rates. In each district parish the inhabitants may treat their own church as if it were their parish church, and make and receive rates for the repair of the same. A body of trustees may now be appointed in each parish to receive contributions for ecclesiastical purposes in the parish. The result of this act of 31 and 32 V. c. 109, is thus not to abolish church rates, but rather to convert them into voluntary payments; allowing, as it does, all faithful adherents of the church to contribute, as before, to the repairs of their own churches. In Scotland the burden of upholding the (Presb.) parish churches is by custom imposed on the heritors of the parish; and where the parish is partly within burgh and partly in the country, the expense must be borne by heritors and proprietors of houses, in proportion to their real rent: see SCOTLAND, CHURCH OF: also DISSENTERS: PARISH. Though very little is said on the subject in Scotland, the

question is still on the same footing as it used to be in England; and an Episcopalian heritor would have as much reason for refusing to pay the customary parish burdens as the English dissenter had for refusing to pay church rates. In Ireland, church rates were abolished 1823.

CHURCH ROAD. see HIGHWAYS.

CHURL, n. *chėrl* [AS. *ceorl*, a countryman: Dut. *kaerle;* Icel. *karl*, a man, a rustic: Ger. *kerl*, a fellow]: a countryman; a surly man. CHURLISH, a. *chėr'lĭsh*, rude; surly; sullen; rough in temper; selfish; said of things unyielding; cross-grained; hard or firm. CHUR'LISHLY, ad. *-lĭ*. CHUR'LISHNESS, n. rudeness of manners or temper.

CHURN, n. *chėrn* [Icel. *kjarni;* Ger. *kern*, the kernel, the choice part of a thing—whence Icel. *kirna;* Fris. *kernjen*, to churn: Dut. and Ger. *kernen*, to curdle, to churn]: machine for agitating milk or cream in order to separate the butter: V. to shake or agitate cream in order to make butter. CHURN'ING, imp.: N. the operation of making butter by agitating milk or cream, or the quantity made at one time. CHURNED, pp. *chėrnd*. For the principle of this operation, see BUTTER. Of the great variety of forms that have been given to the machine, it is difficult to determine which deserves the preference. It is obvious that the more thorough and uniform the agitation, the more completely will the butter be separated from the milk. The consistency and color of the butter also are elements in judging of the relative merits of churns. The temperature of the air and the milk affect the butter in these respects. During summer that of the milk should not exceed 62°, and in very hot weather may be under 60°. During cold weather the milk should be about 2° higher when put into the churn. The speed at which the operation is performed also influences the result. The oldest form is the upright or *plunge* churn. There is a general prejudice in favor of this form of churn on the ground that the butter is more completely separated and of better quality. Its great defect is that the operation being generally performed by hand, is fatiguing. Recent improvements have aimed chiefly at ease in working, and a saving of time. The original *barrel* churn, with a rotatory motion, like a grindstone, which motion was reversed every few rounds, has fallen from high repute into comparative neglect. An improvement on the barrel churn was the making of the barrel stationary, the milk being agitated by internal apparatus fixed on a horizontal spindle which is turned by a winch handle. Barrel churns, sometimes of immense size, are generally used in large dairies in Holland. For small or moderate-sized dairies, perhaps the most suitable is the *box* churn, consisting of a cubical or oblong box, of birch or plane tree, having the agitators fixed on a horizontal spindle. Churns on a centrifugal action have also been successfully used, particularly in Sweden. More recently, churns of a barrel form, with an

oscillating motion like a child's cradle, have been introduced, but without decisively superior results.

To all forms of churns, power other than manual can be applied. In some parts of Europe and America, the dog is employed in churning by means of a contrivance like a squirrel's box. Horse-power is in very general use in large dairies, and in some cases steam power is used.

CHUR'RUS: see HEMP.

CHURUBUSCO, *chô-rô-bôs'kō*, BATTLE OF: in Mexico, 1847, Aug. 20. After the battle of Contreras (q.v.), fought on the same day, Santa Anna with some 27,000 men made a stand at this hamlet, on the river Churubusco, six m. s. of the city of Mexico, to resist the advance of the United States army under Gen. Scott. Churubusco had the strongly-fortified convent of San Pablo and an elevated causeway with a stone bridge across the river. The first assault was made on the convent. Bennet Riley's and Persifor F. Smith's brigades, Dimick's and Taylor's batteries, attacking it from the west and south, were swept by the musket-fire from the building, with heavy loss. Seizing a line of adobe buildings 60 yards from the convent, they opened fire under that protection and held it till the time for advance. Meantime Worth's division, with Pillow, Cadwalader, Garland, Clarke, and others, had charged down the causeway, and were twice repulsed with tremendous loss; but Shields had moved north from Coyoacan and, after a fierce combat, which nearly overwhelmed him, he was reinforced by Lee and Sumner, carried the river line, and moved east against the rear of the bridge. In danger of having their retreat from the capital cut off, the Mexicans lost nerve, and a third charge from the Americans carried the head with a rush. Thence they turned southwest against the convent; the American artillery was still battering it on the other side; a sally from the garrison was driven back and as the fire slackened, both divisions of the Americans entered it from opposite sides at the same time. Gen. Shields joined in the pursuit, which extended nearly to the city of Mexico. Of 8,000 United States troops in the two actions there were 139 killed and 926 wounded: the Mexicans lost 4,000 killed and wounded, 3,000 prisoners and 37 guns.

CHUSAN, *chô-sân'*. island on the e. coast of China, 40 m. n.e. from Ningpo; in 30° 40′ n. lat., and 121° 48′ e. long.; of oblong shape, about 50 m. in circumference. It is mountainous; but has many fertile valleys with plentiful supply of water, and is very carefully cultivated by the hardy and independent people by whom it is inhabited. Its flora is rich; azaleas clothe the mountains; clematises, roses, and honeysuckles grow in great luxuriance. The camphor and tallow tree, and many varieties of bamboo, are found in the valleys. Tea is cultivated to some extent on the hill-sides. For three-fourths of the year the climate is temperate. June, July, and August are the hot months. In August the thermometer averages

83°, but in January and February it is often as low as 20°. Ting-hai, the capital, a walled town about two m. in circumference, containing a fine specimen of Buddhist temple-architecture, surrendered to the British forces, 1840, July 5, and was retaken by them (having been evacuated the previous February) 1841, Oct. 1. At the close of the war the island was delivered up to the Chinese. In 1860, it was again occupied by British troops, but restored by the convention of Pekin. Pop. about 200,000.

CHUSAN ISLANDS: group scattered round the island of Chusan. The most remarkable is the sacred island of Pu-tu, e. from Chusan. It is covered with Buddhist temples, pagodas, and monasteries, which latter are inhabited by a great number of Bonzes, or Chinese priests. The island is devoted exclusively to religious purposes, and no layman is allowed to reside upon it.

CHUSE, v. *chôz:* an old spelling of CHOOSE, v. *chôz.*

CHUTIA, or CHOTÁ, NÁGPUR: see CHOTA NAGPORE.

CHUTNEE, or CHUTNY, n. *chŭt'nĭ* [Hind. *chatnī*]: East Indian condiment, very largely used in India and to an increasing extent in Great Britain. Indian C. is a compound of mangoes, chillies, or capsicum (q.v.), and lime-juice, with some portion of other native fruits, such as tamarinds, etc., the flavor being heightened by garlic. It is sometimes manufactured for sale in England, but not in large quantity. Families occasionally make it for their own use, and employ the following ingredients: Chillies, 1–1½ lb.; apples, 1 lb.; red tamarinds, 2 lbs.; sugar-candy, 1 lb.; fresh ginger root, 1½ lb.; garlic, ½–¾ lb.; sultana raisins, 1½ lb.; fine salt, 1 lb.; distilled vinegar, 5 bottles. The chillies are to be soaked for an hour in the vinegar, and the whole ground with a stone and muller to a paste.

CHYLAQUEOUS, a. *kī-lā'kwĕ-ŭs* [Gr. *chulos*, juice, humor: L. *aqua*, water]: in *zool.*, applied to a fluid consisting partly of water taken in from the exterior, and partly of the products of digestion, which occupy the body cavity in many invertebrates; applied also to the special canals sometimes existing for its conduction.

CHYLE, n. *kīl* [L. *chylus*—from Gr. *chulos*, juice or humor]: in *animals*, a white or milky fluid separated from the substances digested in the stomach, and conveyed into the circulation of the blood by the lacteal vessels. For the various changes which the food undergoes in the alimentary canal, see DIGESTION. One of these changes is its conversion in the stomach into a pulpy mass termed *chyme* (q.v.). The chyme, which passes onward into the small intestine, is acted upon by the bile, pancreatic fluid, and intestinal juice, and through their influences is separated into the *chyle* which is absorbed or sucked up by the lacteals (q.v.) and into matters unfit for nutrition, which ultimately find their way out of the system by the intestinal canal. For the mode in which this nutritious C. is taken up by vessels distributed over the small intestines, and the changes which it undergoes before it is converted

into true blood, see LACTEALS: THORACIC DUCT: and NUTRITION. When obtained from the thoracic duct of an animal that has been killed while the process of digestion was going on (especially if it had taken fatty food), the C. is a white, milky-looking, or yellowish fluid, with a faintly alkaline reaction. Like the blood, it coagulates in about ten minutes after its abstraction from the body of the animal; and in about three hours a small but distinct gelatinous clot is separated from the serous fluid of the chyle. On examining C. under the microscope, we find that it contains enormous numbers of minute molecules (probably consisting of fat), together with nucleated cells, which are termed the chyle-corpuscles, and are apparently identical with the white or colorless blood-cells. The chemical constituents of C. are much the same as those of blood, fibrin, albumen, fat, extractive matters, and salts being the most important. CHYLIFACTION, n. *kī-lĭ-făk'shŭn* [L. *factus*, made]: the process of making chyle from food. CHY'LIFAC'TIVE, a. *-tĭv*, forming or changing into chyle; having the power to make chyle. CHYLIFEROUS, a. *kī-lĭf'ĕr-ŭs* [L. *fero*, I carry]: carrying chyle. CHYLIFEROUS SYSTEM: see LACTEALS: THORACIC DUCT. CHYLIF'IC, a. *-lĭf'ĭk* [L. *facĭō*, I make]: making chyle, usually applied to a part of the digestive apparatus of insects. CHYLOUS, a. *kī'lŭs*, pertaining to or full of chyle.

CHYLOPOIESIS, n. *kī-lō-poy-ē'sĭs* [Gr. *chulos*, juice; *poiĕō*, I make; *poiēsis*, a making or forming]: the process of making chyle from food. CHYLOPOETIC, a. *kī'lō-pō-ĕt'ĭk*, or CHY'LOPOIET'IC, a. *-poy-ĕt'ĭk*, making or producing chyle; belonging to the stomach and intestines; — same meaning as 'chylifaction' and 'chylific,' but more correct in their formation.

CHYME, n. *kīm* [Gr. *chumos*, juice]: the mass of food in the stomach mixed up with the digestion juices as it passes from the stomach: see CHYLE: DIGESTION. CHYME MASS, the central semi-fluid sarcode in the interior of the infusoria. CHYMIFEROUS, a. *kī-mĭf'ĕr-ŭs* [L. *fero*, I bear]: containing or bearing chyme. CHYMIFICATION, n. *kī-mĭf'ĭ-kā'shŭn* [L. *facĭō*, I make]: the process of forming chyme. CHY'MIFY, v. *-fī*, to change into chyme. CHY'MIFYING, imp. CHY'MIFIED, pp. *-fīd*. CHYMOUS, a. *kī'mŭs*, pertaining to chyme. CHYMIST, n. *kĭm'ĭst:* see CHEMIST.

CHYMIST, CHYMISTRY: other spellings of CHEMIST, CHEMISTRY.

CHYTRÆUS, *che-trā'ŭs*, DAVID KOCHHAFF: 1530, Feb 26—1600, June 25; b. Swabia: theologian. He studied under Melanchthon at Wittenberg, became prof. at Rostock, took high rank among the divines of his time, was a member of the diet of Augsburg, and was trusted and employed by Maximilian II. He helped frame the *Formula Concordiæ* and the statutes of Helmstadt, wrote *Chronicon Saxoniæ*, *Historia Confessionis Augustanæ* (1578), *De Morte et Vita Æterna* (1590), and other works, which have been collected in several editions. Schutzius and others have written his life.

CIALDINI, *châl-dē'nē*, ENRICO: 1813, Aug. 10—1892, Sep. 7: b. Modena: Italian general. Designed for the medical profession, he studied at Parma. When the abortive insurrection of 1831 broke out in the duchies C. joined the volunteers of Reggio; and on the capitulation of Ancona, embarked for France, where he resumed his medical studies. The struggles against absolutism in the Iberian peninsula opened anew the career of arms to the Italian exiles. He joined the legion raised by Dom Pedro in France against the Miguelists, when his great personal courage soon secured his promotion; and the unanimous vote of his comrades pronounced him the worthiest man to receive the order of the tower and sword decreed by the government to his company. After the capitulation of Evora, C. joined 1835, Oct. 22, the legion of Oporto, formed under Borso di Carminati for service in Spain. In this force, C. gained further honors. In 1843, he followed Narvaez in his march against Madrid; was made by him colonel of the regiment of St. Ferdinand; and afterward employed in organizing the civil guard on the model of the French *gendarmerie*. He was in this force when Charles Albert headed the Italian rising 1848, when he hurried to Italy, and in the struggle which ensued he received a dangerous wound, and fell into the hands of the Austrians. On his release, he was employed by the Sardinian government to reduce to regular discipline the unruly volunteers from the duchies. He succeeded at last, and fought well at the head of his new regiment in the brief campaign of 1849. During the ten years that elapsed from the defeat of Novara to the renewal of the war in 1859, C. was actively employed. In the Crimea, he commanded the third division of the Sardinian contigent; and on his return was appointed inspector-gen. of Bersaglieri and aide-de-camp to the king—a rare distinction for a man of plebeian origin. He was intrusted by Cavour with the formation of the famous Cacciatori delle Alpi, placed under the command of Garibaldi after the declaration of war, and co-operated actively with them at the head of the fourth division. The victory at Palestro was his chief exploit, the further progress of the Italians being stopped by the peace of Villafranca. In 1860, he defeated the papal army under General Lamoricière at Castelfidardo. Diplomacy delayed the fall of Gaeta till 1861, Feb 13, when it yielded to C. after a vigorous bombardment, as did the citadel of Messina shortly afterward. Turin erected a statue to C. (*Vincitore Sempre*), and Reggio elected him deputy in April. For a few months he was governor of Naples. He had to act against Garibaldi in the second Sicilian expedition. When the army of Italy was reorganized, 1863, C. was appointed to one of the chief commands. Senator in March, 1864, he signalized himself by his brilliant speech in favor of the transfer of the capital 1864, Dec. In the war of 1866, the advice of La Marmora was followed, and the defeat of Custozza was the result. C. was appointed chief of the staff on the resignation of La Marmora. In 1867, C was intrusted by the king with the formation of a new ministry, but failed: he was also made

commander-in-chief of the troops in central Italy. In 1870, he was engaged in the annexation of the papal states; and 1876 he was sent as ambassador to Paris.

CIBAO, *sē-bâ'ō:* mountain range in the middle of Hayti, extending e.s.e. to w.n.w. about 90 m. The chief peaks are over 7,000 ft. high. Gold has been found in these mts., and the chief rivers of the island rise there.

CIBBER, *sĭb'ẽr,* COLLEY: 1671, Nov. 6—1757, Dec. 12; b. London. He was sent to the free school at Grantham, Lincolnshire, 1682. Five years thereafter he returned to London, and in 1688 was a volunteer in the forces raised by the Earl of Devonshire in support of the Prince of Orange. He afterward conceived a passion for the stage, and, after performing gratuitously for several months, he succeeded in obtaining an engagement at 10*s.* per week, which was raised to 15*s.*; and on the commendation of Congreve, who had witnessed his performance of Lord Touchwood, five additional shillings per week were added. Incited by this magnificent success, he, at the age of 22, married Miss Shore, to the great rage of her father, who revenged himself by spending the greater portion of his fortune in the erection of a retreat on the banks of the Thames. After marriage C., discovering that 20*s.* per week was a somewhat insufficient income for an elegant gentleman and an elegant gentleman's wife, was induced to add thereto by the writing of comedies, some of which were remarkably successful. In 1711, he became one of the patentees in the management of Drury Lane, and remained in connection with that theatre till 1730; when, on being appointed poet-laureate, he sold his interest. He was, however, sometimes tempted back to the stage by an offer of 50 guineas a night. C. wrote and adapted many plays, but as an author he is best known by his *Apology.*

CIBBER, *sĭb'ẽr,* SUSANNAH MARIA: 1716–66, Jan. 30: actress. She was a sister and pupil of Dr. Arne the musician, and first appeared in public as a singer, but married, 1734, Theophilus C. (1703–58), son of Colley C. Their domestic life was neither happy nor reputable; she left him and was the heroine of a *cause célèbre.* Appearing, 1736, as Zara, she won very high rank on the stage and a tomb in Westminster Abbey. Handel composed parts for her voice, and Garrick is credited with the saying that tragedy had expired with her.

CIB'OL. see ONION.

CIBORY, n. *sĭ'bŏ-rĭ,* or CIBORIUM, n. *sĭ-bō'rĭ-ŭm* [L. *cibōrĭum;* Gr. *kibōrĭon,* a drinking-cup made from the large pods of the Egyptian bean or lotus, and resembling its seed in form]: in the *R. Cath. Chh.*, the sacred vessel in which the host is kept, being a large kind of chalice with a dome-like covering or lid. In anc. usage the C. was a canopy supported on columns, from which hung the pyx, or chalice, in which the host was deposited. These constructions were often richly ornamented and the pyx was usually in the form of a dove.

CIBRARIO, *che-brâ'rē-o,* LUIGI. 1802, Feb. 23—1870, Oct. 1; b. Turin: Italian historian and politician. He

studied at the Univ. of Turin where he took his degree, 1824, as doctor of laws. He early gained repute in historical investigations. In 1825, appeared his *Notizie sulla Storia dei Principi di Savoia;* in 1826, *Notizie di Paolo Simone de Belli;* and in 1827 *Delle Storie di Chieri Libra IV.* King Charles Albert—with whom he was always a great favorite—frequently employed him in diplomatic service, and in 1848, when Italy rose against the Austrians, appointed C. extraordinary royal commissioner at Venice. During the same year he was created a senator of the kingdom. When Charles Albert—after the unfortunate issue of the war—went to live in voluntary exile at Oporto, C. was sent by the Sardinian senate to induce him to return. He wrote an account of his unsuccessful mission, entitled *Ricordi d'una Missione in Porto gallo al Re Carlo Alberto* (1850). During his public career, however, C. did not neglect his early and favorite pursuits. In 1839, he published *Della Economia Politica del Medio Evo;* in 1840, *Storia della Monarchia di Savoia;* in 1844, *Storia e Descrizione della Badia d'Altacomba;* and in 1847, *Storia di Torino.* But the new life and energy which Sardinia began to manifest under Victor Emmanuel had its claims on his public usefulness. In 1850, he was appointed supt.gen. of customs, and while occupying this office introduced important reforms. Subsequently, he was intrusted with full powers to negotiate a treaty of commerce with France, in which he distinguished himself notably by his advocacy of the principles of free trade. In 1852, he was made minister of public instruction, and in 1855, minister of foreign affairs. When Cavour took this department into his own hands C. became first sec. of the king. In 1857, he was appointed pres. of the telegraphic congress of Turin. In 1860, C. again made a most successful appearance as an author in *Operette Varie* (Torino), and in *Jacopo Valperga di Masino, Cancelliere di Savoya.* He died at Salo, in the province of Brescia.

CICADA, n. *sĭ-kā'dă*, or CICALA, n. *sĭ-kā'lă* [L. *cicāda*, the tree-cricket: It. *cicada*, and *cicala*]: genus of insects of the order *Hemiptera*, sub-ord. *Homoptera*, remarkable for the sounds which they emit, the loudness of which is very extraordinary for creatures of their size. The largest European species are only about an inch long. The elytra, or wing-covers, of the cicadæ are almost always transparent and veined. They dwell on shrubs and trees, of which they suck the juices. The male insects alone possess the organs of sound perfectly developed. These are in no way connected with the mouth or throat, but may be described as a musical apparatus on the under side of the abdomen. This apparatus is very complicated, consisting of a set of membranes and fibres connected with powerful muscles. The sound can be produced even after the insect has been long dead, by pulling the fibres, and letting them

Cicada.

escape. Cicadas are most common in tropical and warm temperate regions. The ancients regarded the sounds of these insects as types of music and eloquence. In some countries they bear names which signify that sleep is banished by their din. The sounds produced by some of the S. American species, which are much larger than the European, are loud enough to be heard at the distance of a mile, and have been likened to the sound of a razor-grinder at work. The Greek name of the C. is *tettix*, often erroneously translated grasshopper. These insects have indeed no resemblance to grasshoppers, and no power of leaping. C. is the Latin name. The modern Italian is *cicale*, the French *cigale*. Byron speaks of the 'shrill cicalas.'

CICADA SEPTENDECIM, or SEVENTEEN-YEAR LOCUST (*Linnœus*): insect belonging to the order of *Hemiptera*, division *Homoptera*. The specific name *septendecim* alludes to a popular belief that it spends 17 years in the imperfectly developed state, not leaving the chrysalis till after that period of larval life. The united scientific and popular observations prove that the insect has a certain degree of periodicity in its visitations, and that 17 years is approximately the measure of its term of absence. In its developed state it is black, veins in wings and the anterior edge of same, orange; eyes, red; rings around body, orange; legs, orange; wings expended, 2½ to 3¼ inches. The markings on the wings form a rude approach to the letters W and M. When they appeared, in 1835, in Louisiana some of the people interpreted these as meaning war with Mexico. The complete insects leave the ground between February and July. They develop in great numbers; the males soon die, it being questionable whether they ever take any nourishment. The female dies soon after laying her eggs; the eggs develop and the larva, which is but 1/16 inch long, falls to the ground and buries itself, to emerge ultimately as a *pupa*. Owing to their slow development, many perish before reaching this stage. After the pupa state is attained, they leave the earth, climb the trunks of trees, and then undergo their final metamorphose. The skin of the pupa splits, and the cicada emerges. Were they annual visitants, they would do incalculable injury; as it is, they destroy and injure much vegetation, as the larvæ attack the roots of plants, sucking the juice therefrom. Birds, insects, and animals prey upon the eggs and larvæ.

CICATRIX, n. *sĭk-ă-trĭks;* CIC'ATRICE, n. *-trĭs* [L. *cicatrix*, a scar: F. *cicatrice*]: the scar or seam that remains after a wound has skinned over and healed. CIC'ATRIZE, n. *-trīz*, to heal a wound; to induce a skin to grow over it; to skin over. CIC'ATRI'ZING, imp. CIC'ATRIZED, pp. *-trīzd*. CIC'ATRIZA'TION, n. *-trī-zā'shŭn*, the process of healing; the being skinned over. CIC'ATRI'SIVE, a. *-trī'zĭv*, tending to promote the healing of a wound. CIC'ATRIC'ULA, n. *-trĭk'-ŭ-lă*, in *bot.*, the scar left after the falling of a leaf; the hilum or base of the seed: in *anat.*, the point in the ovum (egg) in which development begins, and life first shows itself.

CICATRIZATION: process of healing or skinning over of an ulcer or broken surface in the skin or in a mucous membrane, by which a fibrous material, of a dense resisting character, is substituted for the lost texture. The new tissue, in such a case, is called the cicatrix, and usually resembles, to a considerable extent, the structure which it replaces; it is, however, less elastic, and from its shrinking in volume, sometimes produces an appearance of puckering. The glands and other special structures of the original tissue are wanting in cicatrix, which, however, performs perfectly well, in most instances, the office of protection to the parts below the surface. See INFLAMMATION: ULCERATION.

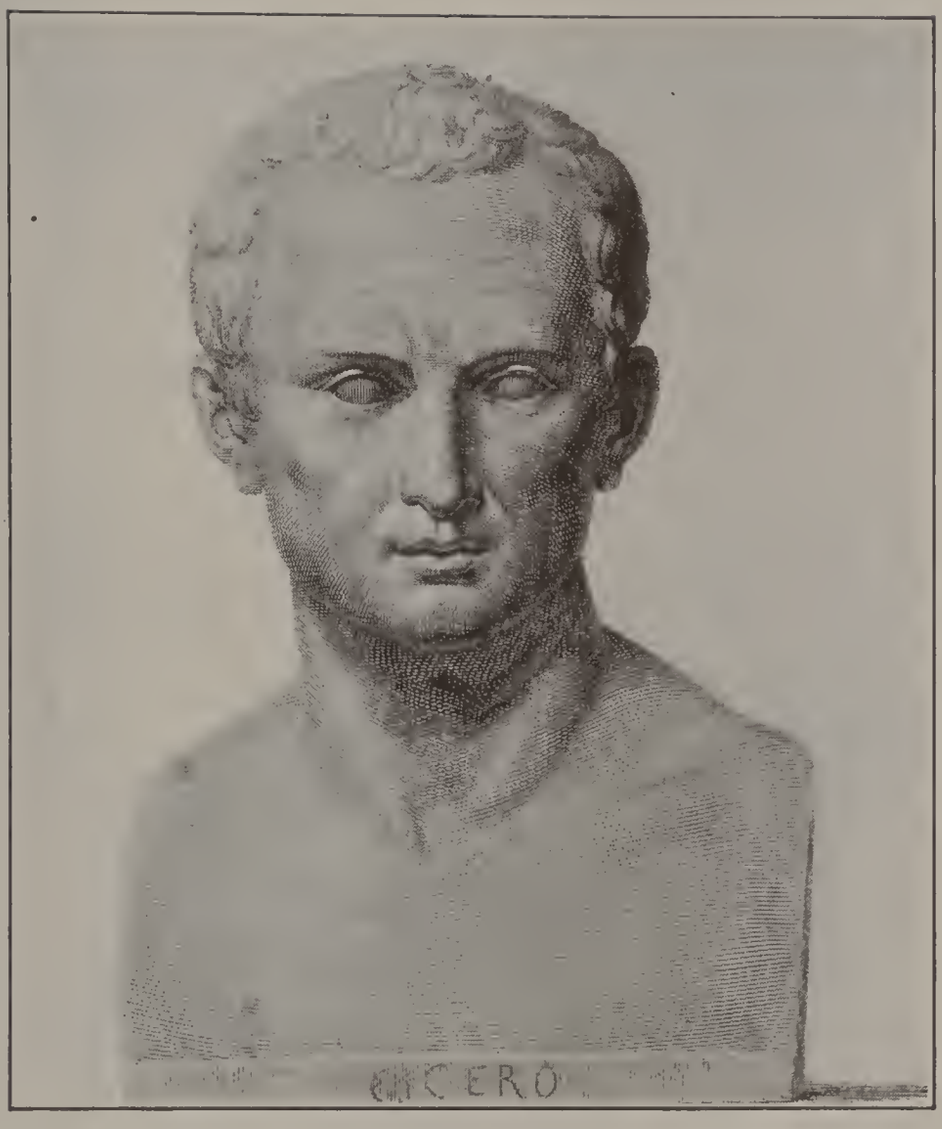
CICCI, *chĭt'chē*, MARIA LOUISA: 1760–1794; Italian poet; b. Pisa. When she was seven years old her father placed her in a convent, ordered her to be instructed merely in domestic duties, and forbade her even being taught to write. By stealth, however, she read some of the best poets, acquired the rudiments of writing, and supplied the want of pen and ink by grape juice and bits of wood. With these rude materials her first verses were written in her 10th year. At a mature age she made herself mistress of natural philosophy, and the English and French languages, and studied the works of Locke and Newton. Her anacreontic verses were distinguished by their grace and spirit.

CICELY, n. *sĭs'ĕ-lĭ* [L. and Gr. *sesĕlis*, the plant hartwort], (*Myrrhis*): genus of umbelliferous plants, nearly allied to Chervil, of which one species, SWEET C. (*M. odorata*), is common in central and southern Europe, and in similar climates in Asia, but in Britain is so generally found near human habitations, that it appears probably to have been introduced. It is sometimes called *Sweet Chervil*, and in Scotland *Myrrh*. It is a branching perennial, two ft. high or upward, with large triply pinnate leaves and pinnatifid leaflets, somewhat downy beneath; the fruit remarkable for its large size, and as well as the whole plant, powerfully fragrant, the smell resembling that of anise. The seeds, roots, and young leaves are used in Germany and other countries in soups, etc. There are about 15 species in North America, western South America, and eastern Asia, grouped into the genus *Washingtonia*, so named in honor of George Washington. Eleven of the 15 are natives of the western United States. They are related to chevril (q.v.) on one side, and to *Scandix* on the other. The smoother sweet cicely (*W. longistylus*) grows in the woods of southern Canada, through Dakota, eastward to North Carolina, southward to Tennessee and Alabama, and westward to Kansas, and on elevations to the height of 4,200 feet. The roots have a rich spicy taste and odor, resembling anise.

CICER, *sī'sẽr*: a genus of the natural order *Leguminosæ*, of the tribe *Viciæ*, of which the chick-pea is a representative.

## CICERO.

CICERO, *sĭs'ē-rō*, MARCUS TULLIUS: greatest orator of Rome, and one of the most illustrious of her statesmen and men of letters: B.C. 106, Jan. 3—B.C. 43, Dec. 7; b. Arpinum. He belonged to an ancient family, of the equestrian order, and possessed of considerable influence in his native district. His father, a man of culture, and desirious that his son should acquire eminent position in the state, removed him at an early age to Rome, where, under the direction of the orator Crassus, he was instructed in the language and literature of Greece, and in all the other branches of a polite education. In his 16th year he assumed the manly gown, and was introduced to the public life of a Roman citizen. He now acquired a knowledge of law, and underwent a complete course of discipline in oratory. At the same time he studied philosophy under three successive preceptors, of the epicurean, academic, and stoic schools, and neglected no mental exercise, however arduous, which might conduce to his future eminence; being thus early of the opinion which he afterward maintained in his treatise *De Oratore*, that an orator should possess almost universal knowledge. With the exception of a brief campaign under Sulla, in the social war, he passed his time in these preliminary studies until his 26th year, when he began to plead in public. In one of his earliest causes, he distinguished himself by defending the rights of Roscius, a private citizen, against one of the favorites of Sulla, who was then dictator. Soon after, for his health, and for improvement in elocution, he travelled to the chief seats of learning in Greece and Asia; and on his return was considered as second to no orator at the Roman bar. Having been elected questor (B.C. 76), he was appointed by lot to a government in Sicily, a post which he filled with great ability, and to the entire satisfaction of those whom he governed. Some years after his return, he laid the Sicilians under still greater obligations by his successful prosecution of their prætor, Verres, against whom he prepared no less than six orations, although the first had the effect of disheartening the accused so effectually that he voluntarily retired into exile. Passing, at short intervals, through the offices of ædile (B.C. 69) and prætor (B.C. 66), he was at length elected, by an overwhelming majority, to the consulship. His tenure of office was rendered memorable by the conspiracy of Catiline, which he frustrated with admirable skill and promptitude: see CATILINE. The highest praises were showered upon C.; he was hailed by Cato and Catulus as the 'father of his country;' and public thanksgivings in his name were voted to the gods. But his popularity did not last long after the expiry of his consulship. His enemies charged him with a public crime, in having put the conspiring nobles to death without a formal trial, and he found it necessary to leave Rome, and went to reside in Thessalonica (B.C. 58.) A formal edict of banishment was pronounced against him, but he was recalled from exile in about 16 months, and on his return to Rome was received with great enthusiasm. His recovered dignity, however, soon excited the envy of the honorable party in the senate,




CICERO.

with whom he had desired to make common cause; while Pompey and Cæsar, the greatest powers in the state, and from whose enmity he had most to dread, courted his alliance and co-operation. Thus, while preserving an appearance of independence, he was betrayed into many actions which he could not but regard as ignominious, and which, by increasing the power of the triumvirs, led indirectly to the ruin of the republic. A remarkable exception to this servile conduct is to be found in his assisting Milo when suing for the consulship, and defending him, against the wish of Pompey, and in spite of the hostile feeling of the populace, after he had slain Clodius in an accidental rencounter. During this period, he composed his works, *De Oratore*, *De Republica*, and *De Legibus*. After a year's admirable administration of the Province of Cilicia (B.C. 51–50), he returned to Italy on the eve of the civil war. With the convictions which he avowed there was but one course which it would have been honorable for him to pursue—to enlist himself, at all hazards, on the side of Pompey and the republic. But instead of this he hesitated, balanced the claims of duty and of interest, blamed Pompey for his want of preparation, and criticised the plan of his campaign. At length he joined the army of the senate, but, after the battle of Pharsalia, abruptly quitted his friends, and resolved to throw himself upon the generosity of the conqueror. After nine months' miserable suspense at Brundusium, he was kindly received by Cæsar, whom he followed to Rome. During the years which ensued, he remained in comparative retirement, composing his principal works in philosophy and rhetoric, including those entitled *Orator*, *Hortensius*, *De Finibus*, *Tusculanæ*, *Disputationes*, *De Natura Deorum*, *De Senectute*, *De Amicitia*, and *De Officiis*. On the death of Cæsar, he was disposed to unite his interests with those of Brutus and the other conspirators, but was restrained by dictates of prudence. In the commotions which followed, he espoused the cause of Octavianus, and gave utterance to his celebrated philippics against Antony. These orations were the occasion of his death. When Octavianus and Lepidus joined with Antony in a triumvirate C. was among the proscribed; and his life was relentlessly sought. The soldiers of Antony overtook him while his attendants were bearing him, now old and in an infirm state of health, from his Formian villa to Caieta, where he intended to embark. He met his death with greater fortitude than he had supported many of the untoward incidents of his life. Desiring his attendants to forbear resistance, he stretched forward in the litter, and offered his neck to the sword of his executioners. He died in the 63d year of his age.

The character of C. is one which is not difficult to estimate. Really a lover of virtue, no one could follow in her footsteps with greater dignity when attended by the popular applause. But he was weak enough to yield to the depraved spirit of his times, and to act according to his convictions only when they were not evidently discordant with his private interests. Few men, possessing such tal-

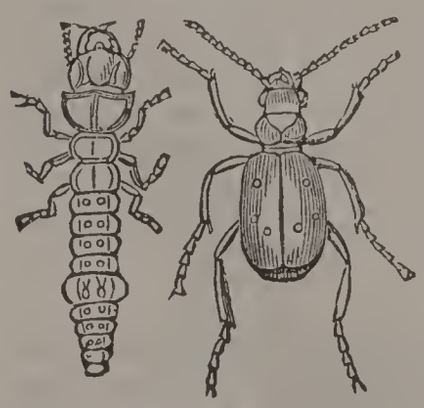
ents, have been so utterly devoid of anything approaching to heroism. As a statesman, it would be unjust to deny his legislative abilities; but he was generally deficient in courage and resolution. He was one of the greatest masters of rhetoric that have ever lived. His orations were the result of consummate art, combined with unwearied industry, and survive as characteristic memorials of a time when eloquence, far more than at present, was a power which bent the verdicts of judicial tribunals, and influenced the decrees of the state. In philosophy, he does not rank with the original thinkers of antiquity; nor, in truth, did he aspire to do so. His writings on speculative subjects are valuable as reflecting the varied thought of the different schools. See his collected works by Orelli (9 vols., 1837; new ed. 1845); by Baiter and Kayser (1869). Also the lives by Middleton, Forsyth (1864), and Jeens (1880); and Trollope's *Life*, 2 vols. (1880).

CICERONE, n. *sĭs'ĕ-rō'nĕ*, or *chĭch'ĕ-rō'nĕ;* CIC'ERO'NI, n. plu. *-rō'nē* [It.—from *Cicero*, or *Cicerōnem*, the great anc. orator]: one who explains curiosities and antiquities; a guide. Cicerones are of all degrees, from distinguished archæologists, who undertake the office as a favor, to the humble *laquais de place*, who, though quite indispensable on a first arrival, is too often both incompetent and dishonest. The stranger ought to be particularly on his guard against allowing a C. to make purchases for or even with him, as the practice of adding a commission to him to the price charged now prevails probably in every country in Europe. CICERONIAN, a. *sĭs'ĕr-ō'nĭ-ăn*, like Cicero in style; eloquent. CIC'ERO'NIANISM, n. *-ĭzm*, imitation of Cicero.

CICHORACEOUS, a. *sĭk'ŏ-rā'shŭs* [L. *cichŏrĭŭm*, chicory]: of or pertaining to chicory or succory.

CICHO'RIUM: see CHICORY and ENDIVE.

CICINDELA, *sĭs-ĭn-dē'la:* genus of insects of the order *Coleoptera*, section *Pentamera*, type of a large family, *Cicindelidæ*. This family is nearly allied to *Carabidæ*, and the insects belonging to it are among the most voracious of those beetles which, both in their perfect and larva state, prey on other insects. They have a strong head, with projecting toothed mandibles, and are particularly distinguished by a sort of hook or nail, which is articulated by its base to each of the lower jaws or maxillæ. They are more abundant in tropical than in cold countries. The head of the larva is large, concave above, and the back furnished with two remarkable hooked spines, which are said to be used as anchors to fix it at any part it chooses of its burrow in the earth; while the soil



*Cincildela campestris*, larva and perfect insect.

which it excavates is carried to the mouth of the burrow in a sort of natural basket formed of the concave back of the head and the recurved mandibles. The larva lies in wait in its burrow, its head just level with the ground, till its prey comes within reach, upon which it suddenly rushes.—*C. campestris*, a green species with whitish spots, is common in most parts of Britain in dry, sandy places exposed to the sun.

CICISBEO, n. *chē-chĭs-bā'ō* [It.]: in *Italy*, the professed gallant or constant attendant on a married woman; a married lady's guardian in public. In the higher ranks of Italian society, it was at one time considered unfashionable for the husband to associate with his wife anywhere except in his own house. In society, or at public places of amusement, the wife was accompanied by her C., who attended at her toilet to receive her commands for the day. This custom, which was once universal, and which naturally gave rise to much scandal, has now almost disappeared. C. is synonymous with *cavaliere servente*. CICISBEISM, n. *chĕ-chĭs'bē-ĭzm*, the system which assigns a male guardian to a married lady other than her husband.

CICOGNARA, *che-kōn-yâ'râ*, LEOPOLDO, Count DE: 1767–1834, Mar. 5; b. Ferrara, Italy: archeologist and writer on art. He pursued his favorite studies at Rome, explored Sicily, and visited Florence, Milan, Bologna, and Venice, fixing the residence at Modena, 1795. Here he became a legislator, councilor of state, and minister of the Cisalpine republic at Turin. From 1808 he was pres. of the Acad. of Fine Arts at Venice, the efficiency of which he greatly promoted. His *Del Bello Ragionamenti* (1808), was dedicated to Napoleon, who decorated him with the iron crown, and assisted the publication of his great work, *Storia della Scultura* (3 vols. Venice, 1813–18): this is marred by excessive admiration for his friend Canova Under the patronage (afterward lost) of Francis I. of Austria, he brought out *Fabbriche più conspicue di Venezia* (2 vols. folio, 1815–20). This and other splendid and expensive works reduced him to poverty. He produced a *Catalogue raisonné* (2 vols. Pisa, 1821) of his fine collection of books on art, which were bought 1824 by Leo XII., for the Vatican library.

CICO'NIA: see STORK.

CICU'TA: see HEMLOCK.

CIDARIS, n. plu. *sĭd'ăr-ĭs* [Gr. *kid'ăris*, a turban]: genus of *Echinidæ* (q.v.), or sea-urchins, closely allied to the genus *Echinus* itself, and included with it in a family or tribe called *Cidarites*, in which the mouth and anus are opposite to each other—the mouth below, and the anus above. Only one species, *C. papillata*, has been found in the British seas, and that only on the coasts of Zetland. The Zetlanders call it the *Piper*, from a resemblance which they trace in its globe and spines to a bagpipe. They say that it is sometimes found with spines a foot long. The markings of the shell and spines are extremely beautiful.

CID CAMPEADOR, Sp. *thēth kăm-pā-â-thōr'*: name given

in histories, traditions, and songs to the most celebrated of Spain's national heroes, Roderigo Ruy Diaz, d. 1099. There is so much of the mythical in the history of this personage, that hypercritical writers, such as Masdea, have doubted his existence; but recent researches, more particularly those of Dozy, and the investigation of newly-discovered Arabic sources, have succeeded in separating the historical from the romantic. See Dozy's *Récherches sur l'Histoire Politique et Littéraire de l'Espagne pendant le moyen âge* (Leyden, 1849). The following is the result of these inquiries: Roderigo Ruy Diaz (Roderic the son of Diego) was descended from one of the proudest families of Castile. His name first appears in a document written 1064, during the reign of Ferdinand of Leon. Under Sancho II., son of Ferdinand, he became standard-bearer and commander of the royal troops. In a war between the two brothers, Sancho II. and Alfonso VI. of Leon; it was a stratagem of Roderic's—which, according to modern notions, was anything but honorable—that secured the victory of Sancho at Llantada (1068) over his brother, who was forced to seek refuge with the Moorish king of Toledo. He appears at this time to have already been called the *Campeador*, a word supposed to answer to our champion.

Upon the assassination of his friend and patron, King Sancho, he required the next heir, Don Alonzo, to clear himself by oath of any participation in his brother's murder, ere the nobles of Leon and Castile should do homage to him. By this act, he incurred the new monarch's enmity, an enmity which, however, the king's policy concealed in the hour of danger, and he even consented to Roderic's marriage with his cousin Ximena—daughter of Diego, Duke of Asturia. But when the king thought the services of Roderic no longer necessary to his own safety, he readily gave ear to the latter's personal enemies, and banished him in 1081. Roderic then joined the Moorish kings of Saragossa, in whose service he fought against both Moslems and Christians. It was probably during this exile that he was first called the Cid or Sîd, an Arabic title which means lord. He frequently defeated the king of Aragon and the Count of Barcelona, the latter of whom, Berenguer Ramon II., he took prisoner.

He was again reconciled to the king, but only for a short time, when he was condemned to a second exile. In order to support his family and numerous followers, he now saw himself forced to carry his sword against the Moors, over whom he gained a victory, and established himself as sovereign or lord of Valencia (1094). He retained possession of Valencia five years, during which time he took many neighboring fortresses. He died of grief 1099, on learning that his relative and comrade in arms, Alvar Fanez, had been vanquished by the Moors, and that the army which he had sent to his assistance had been defeated near Alcira. After the Cid's death, his widow held Valencia till 1102, when she was obliged to capitulate to the Almoravides, and fly to Castile where she died 1104. Her remains were placed by those of her lord in the monastery of San Pedro

de Cadeña. The Cid had a son, who was slain by the Moors in a battle near Consuegra. He also left behind him two daughters, one of whom was married to the Count of Barcelona; the other to an Infant of Navarre, through whom the kings of Spain and many royal houses of Europe claim kindred with *'Mio Cid el Campeador.'* Relics of the 'Blessed Cid,' as he is still called in Spain, such as his sword, shield, banner, and drinking-cup, are still held in great reverence by the populace. The numerous *Cid romances* that were published first in the 16th c. contain the most romantic improbabilities concerning the life and deeds of the Cid See *Silva de Varios Romances* (1550), and *Romancero General* (1604). These romances were taken from the ancient *cantares* (national songs) and *poemas*, most of which are entirely lost. The most important of modern works on this subject, besides that of Dozy above mentioned, are Huber's *Geschichte des Cid*, etc. (Bremen 1829), and Southey's fascinating *Chronicle of the Cid* (Lond. 1808). See also Willemaer's, *Le Cid* (Bruss. 1873). The first adequate English translation is that of Mr. Ormsby, 1879.

CIDER, n. *sī'dėr* [F. *cidre;* OF. *sidre*, cider—from L. *sicĕră*, strong drink]: juice of apples fermented. In making C. the fruit should be used when it has attained full maturity, and before it begins to decay. The operation of grinding the apples should be deferred till December, if possible. It is absolutely essential that the weather should be cold, even slightly frosty, to counteract the tendency to rapid fermentation. The apples should be reduced by the mill as nearly as possible to a uniform mass, in which the rind and seeds are scarcely discoverable, and the pomace should be exposed to the air. It has been ascertained that, by exposing the reduced pulp to the operation of the atmosphere for a few hours, the specific gravity of the juice increases from 1.064 to 1.078. For fine cider the fruit should be ground and pressed imperfectly, and the pulp then exposed 24 hours to the air, being spread and once or twice turned, to facilitate the absorption of oxygen; it should be then ground again, and the expressed juice added to it before it is again pressed. The best method of grinding the apples is to employ cylindrical rollers placed so near each other as to crush them. They are fed from a hopper above them, from which the apples pass between a pair of fluted or toothed cylinders, by which they are torn and partially crushed before reaching the more perfectly crushing apparatus below. The mass is then powerfully pressed, and the cider is run into casks. The vinous fermentation commences and terminates at different periods, according to the condition and quality of the fruit and the state of the weather. The best thing whereby to judge of the proper moment to draw the liquor from the scum and sediment is the brightness of the liquid which appears after the discharge of fixed air has ceased and a thick crust has collected on the surface.

The clear liquor should then be drawn off into another cask. If it remains bright and quiet, nothing more need be done to it till the succeeding spring; but if a scum collects on the surface it must immediately be racked off again, as this would produce bad effects if suffered to sink. CI'DERKIN, n. *-kĭn*, a poor liquor made from the refuse of apples after the juice has been pressed out for cider.

CI-DEVANT, ad. *sē'dĕ-vŏng'* [F. *ci*, here, this; *devant*, before]: formerly; heretofore; late.

CIENFUEGOS, *sē-ĕn-fwā'gōs:* city of Cuba, cap. of a district; on the bay of Jagua on the s. coast, 130 m. s.e. of Havana. It is named from a capt.gen. of Cuba who founded it about 1813, and is said to be the most beautiful town on the island. It has a good harbor, defended by the fort of Los Angeles, and railroad communication with Cardenas and other places on the n. coast. Cienfuegos is connected directly by cable with Santiago de Cuba and Havana. During the SPANISH-AMERICAN WAR (q.v.) the harbor of Cienfuegos was effectually blockaded, and when a Spanish mail steamer, the *Argonauta*, tried to force the blockade she was captured (first capture of the war) by the U. S. gunboat *Nashville*, 1898, Apr. 29. On the same day the cruiser *Marblehead* bombarded its fortifications. On May 14 four boat-crews from the American vessels rowed into the harbor and, under the protection of the guns of their ships, cut the cables, thus preventing any information regarding the movements of the American flying squadron from reaching Havana or Santiago. Cienfuegos has a good local trade, and exports sugar, wax, and timber. Pop. 30,000.

CIEZA, *thē-ā'thâ:* town of Spain, province of Murcia, 26 m. n.w. of the city of Murcia; on an eminence near the river Segura, overlooking a plain of great fertility. The streets are wide and well paved; and there are manufactures of linen, hempen fabrics, wine, and oil; and silkworms are reared. Pop. 14,000.

CIGAR, n. *sĭ-gâr'* [Sp. *cigarro*, originally a particular kind of tobacco: F. *cigare*]: a small roll of tobacco-leaf for smoking (see TOBACCO). CIGARETTE, n. *sĭg'ă-rĕt'*, small cigar, of tobacco more or less finely divided, and rolled up in a wrapper forming a bundle of approximately cylindrical shape. For wrapper, corn husk, tobacco leaves, or sections of straw, or tissue paper, are used. The manufacture has attained immense development in the last 10 years. Formerly the consumer as a rule made his own cigarettes one at a time, rolling up the tobacco in a wrapper. They are now made principally in factories. The tobacco is selected with care and subjected to various treatment, each manufacturer having his own systems. Glycerine is used to preserve the moisture of the tobacco; and as flavoring a great variety of substances is used. As wrapper the purest tissue paper is generally used. Sometimes it is prepared in color to resemble tobacco. One such preparation is

made by dusting dampened paper with impalpable powder of tobacco and subjecting piles of sheets thus treated to pressure until dry. The best paper is said to come from Alcoy, in Valencia, Spain. The rolling of the cigarettes is generally done by hand. The tobacco for each cigarette is picked up by the fingers, and wonderful accuracy is attained by practice. Though many machines, some successful, have been invented for rolling cigarettes, none have been able to displace hand-work. Medical authorities trace serious diseases to the habitual use of cigarettes, especially by persons not yet mature; and legislation has been invoked in many states to prohibit their sale to minors.

CILIA, n. plu. *sĭl′ĭ-ă* [L. *cilĭum*, an eyelid with the hairs growing on it: It. *ciglio:* F. *cil*]: the hair of the eyelids; hairs on the margin of any body; hair-like processes from the margins of leaves, petals, etc.; thin hair-like projections from an animal membrane which have a quick vibratory motion—seen only by the microscope (see EPITHELIUM. CIL′IARY, a. *-ĭ-ėr-ĭ*, belonging to the eyelids or cilia. CIL′IA′TED, a. *-ĭ-ā′tĕd*, in *bot.*, furnished or surrounded with parallel filaments or bristles resembling the hairs of the eyelids. CIL′IOBRACH′IATE, a. *-ĭ-ŏ-brăk′-ĭ-āt* [L. *brachĭŭm*, an arm]: having the arms provided with cilia. CILIARY MOTION, that rapid vibratile motion characteristic of cilia in a state of action, which thus create currents in the surrounding or contiguous fluid.

CILICIA, *sē-lĭsh′e-a:* ancient division of Asia Minor, now included in the Turkish eyalet of Koniah. The Taurus range, which separated it from Cappadocia, bounded it on the n., the Gulf of Issus and the Cilician Sea on the s., while the Amanus and Pamphylia bounded it respectively on the e. and w.: lat. 36° —38′ n., long. 32° 10′—37° 8′ e. The e. portion of Cilicia was fertile in grain, wine, etc.; while the w. and more mountainous portion furnished inexhaustible supplies of timber to the ancients. The pass called by the Turks Gölek Bógház is that by which the younger Cyrus passed from Tyana in Cappadocia to Tarsus; and it is also the same by which Alexander the Great entered Cilicia. Pop. about 100,000, mostly nomadic.

In early ages Cilicia was ruled by its own kings, the dynasty of Syennesis being apparently the most important. The Cilicians were a distinct people in the time of Xenophon; but the Greeks appear to have got a footing after the time of Alexander. The Cilicians were notorious pirates, but having carried on their depredations too close to the shores of Italy, the Roman arms were turned against them, and Cilicia was made a Roman province in Pompey's time.

CIMABUE, *che-mâ-bô′ā*, GIOVANNI: 1240—soon after 1300; b. Florence: one of the restorers of the art of painting in Italy, which had fallen into neglect during the bar-

barism of the dark ages. At this time, the fine arts were practiced in Italy chiefly by Byzantines, and had degenerated into a worn-out mechanical conventionalism. C. studied at first under Byzantine masters, and adopted their traditional forms, but gradually excelled his teachers, made innovations on their fixed patterns, and gave life and individuality to his works. Two remarkable pictures of the Madonna by C. are still preserved in Florence—one (chiefly Byzantine in style) in the Academy; the other, displaying a more purely original genius, in the church of Santa Maria Novella. It is said that this latter work in the time of C. was admired as a miracle of art, and was carried to the church in a sort of triumphal procession. More remarkables pictures, in point of expression or dramatic effect, are found in C.'s frescoes in the church of San Francisco at Assisi. What strikes one as very wonderful about C.'s pictures, is the accuracy of his naked figures, considering that he had no better professional guides than the Byzantine artists. His draperies also were very good, but he had apparently no knowledge of perspective, though acquainted with architecture. His greatest pupil was Giotto (q.v.).

CIMAROSA, *che-mâ-ro'zâ*, Domenico: 1749, Dec. 17 —1801; b. Aversa: Italian composer of operas. He was educated in music under Sacchini, and in the conservatory of Loretto. His first pieces were the *Sacrificio di Abramo* and the *Olympiade*. When barely 22 years of age, he had achieved a reputation in all the leading Italian theatres. He was then called to St. Petersburg, where he resided four years. Afterward, he lived at various German courts; thence he proceeded to Vienna, where he became imperial chapel-master; finally, he returned to Italy. At Naples, his comic opera, *Il Matrimonio Segreto*, composed Vienna 1791, was repeated 57 times in succession. C. died at Venice. His comic operas, which are remarkable for novelty, spirit, whimsicality, and liveliness of idea, show also great knowledge of stage-effect. The wealth and freshness of his invention gave rise to the saying that one finale of C. contained material for a dozen operas.

CIM'BALO: musical instrument with a set of keys like the clavecin or harpsichord.

CIM'BRI, or Kim'bri: a people who issued from the n. of Germany in conjunction with the Teutones, and came into hostile contact with the Romans first in the eastern Alps, B.C. 113. They were victorious in several great engagements, and were prevented from devastating Italy only by sustaining a terrible defeat from Marius, on the Raudii Campi, near Verona, or, according to others, near Vercelli, B.C. 101, Aug. Their infantry fought with their shields fastened together by long chains; their horsemen, of whom they had 15,000, were well armed with helmet, coat of mail, shield, and spear. Marius had so chosen his position that the sun and dust were in their faces, and yet they contested the victory most bravely with the Romans who were 55,000 strong. When the battle was lost, the women, who

remained in the camp formed of the wagons, killed themselves and their children. 140,000 C. are said to have fallen in the battle; the number of prisoners is given at 60,000. It is not till long afterward, when the Romans themselves penetrated into Germany, that the name of the C. again appears. Cæsar represents the Aduatici of Belgium as the descendants of the C. and Teutones. Tacitus speaks of a people bearing the name of C., few in number but of great reputation, that sent ambassadors to Augustus. This people lived in the extreme north of Germany, on the borders of the ocean; according to Pliny and Ptolemy, at the extremity of the peninsula called from them the Cimbric Chersonese, now Jütland. The ethnology of the C. is doubtful. Greek writers associated them groundlessly with the Cimmerians (q.v.); Sallust calls them Gauls; Cæsar, Tacitus, and Plutarch looked upon them as Germans, and the opinion of their German origin has been adopted by most moderns. Yet H. Müller, in his *Marken des Vaterlandes* (1837), has endeavored to show that they belonged to the Celtic race, and lived originally on the n.e. of the Belgæ, of kindred origin, and that their name is the same as that by which the Celts of Wales designate themselves to this day—*Cymri.*

CIMBRIC, a. *sĭm'brĭk:* pertaining to the Cimbri, an ancient tribe of northern Germany and Denmark.

CIMETER, or CYMETAR, n. *sĭm'ĕ-tẽr* [F. *cimeterre*—from It. *scimiterra;* Sp. *cimitarra;* Pers. *shamsher,* a sword]: a short curved sword used by the Persians and Turks; also spelled SCIMETAR, SCIMITAR, and SCYMETAR.

CIM'EX AND CIMIC'IDÆ: see BUG.

CIMICIF'UGA, or BUG-BANE: herb of the order *Ranunculæ.* Incisely toothed leaflets; flower, white; herbaceous stem, four to six ft. high. Also called snakeroot and black cohosh. The aqueous decoction or alcoholic extract of the root of *C. racemosa* is used in medicine in cases of chorea, and was formerly used in rheumatism.

CIMINNA, *chē-mĭn'nâ:* town of Sicily, Province of Palermo, 18 m. s.e. of the city of Palermo. Pop. about 10,000.

CIMMERIAN, a. *sĭm-mē'rĭ-ăn* [L. *Cimmērĭum,* a former name of the *Crimea,* fabled by the ancients to have been continually shrouded in darkness]: extremely dark; very obscure; benighted. CIMMERII, n. plu. *sĭm-mẽr'ĭ-ī,* or CIMMERIANS, anc. mythical people who were said to live in the furthest w. on the ocean amid constant mists and darkness; in the poems of Homer, the name of the people dwelling 'beyond the ocean-stream,' where the sun never shines and perpetual darkness reigns.—But the historic C. were a people whose country lay between the Borysthenes (Dnieper) and the Tanais (Don), including also the Tauric Chersonesus (Crimea). The Cimmerian Bosporus (Strait of Yenikale) derived its name from them: see BOSPORUS. KAFFA. Being driven out by the Scythians, they migrated to Asia Minor, dwelt there for some time, plundered Sardis,

tailed in an attempt upon Miletum, and were finally routed and expelled by the Lydian king Alyattes, some time after B.C. 617.

CIMOLITE, n. *sĭm′ō-līt:* a pure white or grayish-white variety of clay from the island of *Cimolus* (now Argentiera), in the Grecian Archipelago, used as a fuller's earth (q.v.). It is a hydrated silicate of aluminum, apparently formed by the decomposition of augite. It is of a light color, compact, and somewhat slaty. Water soon splits it up; when ground with water it forms a thick cream. In classical times it was used as a soap for cleaning delicate fabrics, and by the bath-keepers. It is mentioned by Aristophanes in this connection. It is used in the island as a detergent. CIMOLIAN, a. *sĭ-mō′lĭ-ăn*, pertaining to.

CIMON, *sī′mon:* an Athenian commander; d. B C. 449; son of Miltiades who was the conqueror at Marathon. In conjunction with Aristides, he was placed over the Athenian contingent to the allied fleet, which, under the supreme command of the Spartan Pausanias, continued the war against the Persians (B.C. 477). He effected the important conquest of Eïon, a town on the river Strymon, then garrisoned by the Persians. Later (according to Clinton, B.C. 466), when commander-in-chief, he encountered a Persian fleet of 350 ships at the river Eurymedon, destroyed or captured 200, and defeated the land-forecs on the same day. He succeeded likewise in driving the Persians from Thrace, Caria, and Lycia; and expended much of the money which he had obtained by the recovery of his patrimony in Thrace upon the improvement of the city of Athens. At this period he appears to have been the most influential of the Athenians. The hereditary enemy of Persia, it was his policy to advocate a close alliance with Sparta; and when the Helots revolted he led an army upon two occasions to the support of the Spartan troops; but on the latter occasion, having lost the confidence of his allies, he was ignominiously dismissed. After his return to Athens his policy was opposed by the democracy, headed by Pericles, who procured his banishment by ostracism. He was recalled in the fifth year of his exile, and was instrumental in obtaining a five years' armistice between the Spartans and the Athenians. He died while besieging the Persian garrison of Citium in Cyprus.

CINALOA, *sĭn-â-lō′â:* town of Mexico, in the state of C., on the Rio Cinaloa, about 50 m. from its entrance into the Gulf of California. It is a thriving place, with goldwashings in the vicinity. Pop. about 9,000.

CINAPUSEN, *sē-nâ-pô′sân*, or CINAPURAN ISLANDS, a cluster of 10 islands of the Tawi group, Sulu Archipelago, lying southwest of the island of Sulu; area 13 square miles. The islands are covered with tropical vegetation, and are mostly resorted to for fishing by natives of neighboring islands. Tabawan, the largest of the cluster is, however, thickly populated: the inhabitants

carry on a considerable pearl fishery. They were at one time notorious pirates, but since the destruction of their settlements by a Spanish fleet, have been harmless and inoffensive. The islands now belong to the United States and are a part of the Military Department of Mindanao.

CINCHONINE, n. *sĭn-kō′nĭn*, sometimes CHINCHONINE [said to be after Countess of *Chinchon* (q.v.), wife of a viceroy of Peru, A.D. 1638; but whose name probably only modified *kina*, or *kinakina*, the native Peruvian name]: the bark of a tree of many species growing in Peru, etc., also called Peruvian bark, and Jesuits' bark; the tree itself, ord. *Rubĭācĕæ*. CINCHONACEOUS, a. *sĭn′kō-nā′shŭs*, of pertaining to the chinchonine. CINCHON′IC, a. *-kŏn′ĭk*, pertaining to. CIN′CHONISM, n. *-kō′nĭzm*, in *med.*, a disturbed condition of the body caused by overdoses of cinchonine or quinine.

CINCHONINE: a most important genus of trees of the nat. ord. *Cinchonaceæ*, yielding the bark so much valued in medicine, known as Peruvian bark, Jesuits' bark, China bark, quina, quinquina, cinchona bark, etc., and from which the important alkaloids *Quinia* or *Quinine* (q.v.), and *Cinchonia* or *Cinchonine*, are obtained. The species of this genus are sometimes trees of great magnitude; but an aftergrowth springing from their roots when they have been felled, often appear only as large shrubs; and some of them, in the highest mountain regions in which they are found, are low trees with stems only eight or ten ft. in height. They are natives of S. America, between s. lat. 20° and n. lat. 10°, and chiefly on the e. slope of the second range of the Cordilleras. All the cinchonines are evergreen-trees, with laurel-like, entire, opposite leaves, stipules which soon fall off, and panicles of flowers which, in general appearance, are like those of lilac or privet. The flowers are white, rose-colored, or purplish, and very fragrant. The calyx is small and five-toothed; the corolla tubular with a salver-shaped five-cleft limb. In the true *Cinchonas* the capsule splits from the base upward; the species in which it splits from above downward form the sub-genus *Cascarilla*, the distinction acquiring importance from the consideration that the barks of the former alone contain the alkaloids so valuable in medicine; and this property is further limited to those species which have the corolla downy or silky on the outside. Beyond the botanical limits thus narrowly marked out not a trace of these alkaloids has yet been discovered anywhere.

Great difficulty has been found in determining the species by which the different varieties of C. bark known in commerce are produced. The common commercial names are derived partly from the color of the kinds, and partly from the districts in which they are produced, or the ports where they are shipped. It appears, however, to be now ascertained that *Calisaya bark*, also called royal or genuine yellow bark, one of the very best kinds—mostly

shipped from Africa—is chiefly the produce of *C. Calisaya*, a large tree growing in hot mountain valleys of Bolivia and the south of Peru. To give all the varieties of bark and species of the tree would go beyond our limits.

The accurate discrimination of the different kinds of bark requires much experience. The taste is always bitter, but it is possible even to distinguish by the taste those varieties which contain quinine most largely from those in which cinchonine is most abundant.

The cutting and peeling of C. trees are carried on by Indians, who go in parties, and pursue their occupation during the whole of the dry season. They build a hut, which serves both for their abode and for drying the bark. The trees are felled as near the root as possible, that none of the bark may be lost; and the bark being stripped off, is carefully dried; the quilled form of the thinner bark is acquired in drying. The bark is made up into packages of various size, but averaging about 150 lbs. weight, closely wrapped in woolen cloth, and afterward in hides, to be conveyed on mules' backs to the towns. These packages are called drums or *seroons*. It is in them that the bark is always brought to Europe.

A number of spurious kinds of Peruvian or C. Bark are either sent into the market separately, or are employed for adulterating the genuine kinds. They are bitter barks, and have, in greater or less degree, febrifugal properties, but are chemically and medicinally very different from true C. bark. They are produced by trees of genera very closely allied to the cinchonine.

While C. trees have been becoming every year more scarce in their native regions, no attempt has been made to cultivate them there, notwithstanding the constantly increasing demand for the bark; but the Dutch have made extensive plantations in Java, and the same has been done in British India and Ceylon. The plantations in Jamaica now yield bark superior to the best produce of Ceylon. Plantations have been made also in Trinidad, Mauritius, and St. Helena. See PERUVIAN BARK. The Indians of Peru called the C. trees *Kina*, whence are derived the names *China*, *Quina*, etc. But it is not certain that they knew the use of the bark before the arrival of the Spaniards.

The chief active principals are the two alkaloids, quinine (q.v.) and cinchonine. The latter is not generally present in so large a proportion as the quinine, and does not possess such powerful medicinal properties. When isolated the alkaloid *cinchonine* can be obtained in a crystallized state.

C. bark itself has, in later times, fallen into comparative disuse, owing to the discovery of the alkaloid quinine, which is now extensively in use in medicine in the form of sulphate or disulphate of quinine, and is given in doses of from one to twenty grains, in almost all the cases to which the bark was supposed to be applicable.

CINCHONINE, a crystalline alkaloid, $C_{19}H_{22}ON_2$, melting

at 255.°4C., found, together with quinine, in cinchonine bark, being present to the extent of 0.2–2%. It is more soluble than quinine and is, therefore, found in the mother-liquors of the bark extract after the removal of the quinine. Medically it is similar to quinine, but is decidedly less active. Its salts resemble closely those of quinine, the sulphates, for example, having the formula $(C_{19}H_{22}ON_2)_2.H_2SO_4.2H_2O$ and $C_{19}H_{22}ON_2.H_2SO_4.4H_2O$, respectively. Solutions of these salts are not fluorescent unless quinine or other impurity is present. The exact chemical constitution of C. is unknown, but it is closely related to quinoline and pyridine (q.v).

CINCHONACEÆ, *sĭn-kō-nā′sē-ē:* a nat. ord. of exogenous plants, consisting of trees, shrubs, and herbaceous plants, with simple, entire, opposite, or whorled leaves and stipules between their footstalks. The calyx is adherent to the ovary; the corolla is tubular and regular, its segments are equal in number to those of the calyx, when the calyx is divided; the stamens arise from the corolla, and are alternate with its segments. The ovary is surrounded by a disk, and usually two-celled; the style single, the fruit either splitting into two halves or not splitting at all, either dry or succulent.—This order has been very generally regarded by botanists as a sub. ord. of *Rubiaceæ* (q.v.), but far exceeds all the rest of that order, both in the number and importance of its species, of which from 2,500 to 3,000 are known, mostly tropical, and the remainder, with few exceptions, sub-tropical. The C. are nearly allied to *Caprifoliaceæ* (woodbines or honeysuckles, etc.), and interesting relations have been pointed out between them and *Umbelliferæ.* They constitute a very large part of the flora of tropical regions. Besides the genus *Cinchona* (q.v.) and other genera producing febrifugal barks—*Exostemma, Condaminea, Pinckneya, Portlandia,* etc.—the order produces a number of valuable medicinal plants, of which ipecacuanha (q.v.) is the most important. The coffee (q.v.) shrub belongs to it; also the tree which yields Gambir (q.v.). It produces a number of plants employed in dyeing, among which are the Chay Root or Choya, and some species of *Morinda.* Some trees of this order yield valuable timber. Many of the species have beautiful and fragrant flowers; and some produce pleasant fruits, among which are the Genipap (*Genipa Americana*) of S. America the native peach (*Sarcocephalus esculentus*) of Sierra Leone, and the voavanga of Madagascar (*Vangueria edulis*). An extract with some sweetness and a more astringent taste than terra japonica, and called by the Malays gambier, is obtained from the *Uncaria gambir.* Ipecacuanha is the root of *Cephäelis ipecacuanha,* a little, creeping-rooted, semi-herbaceous plant, found in the damp forests of Brazil.

CINCIA LEX, *sĭn′shĭ-a lĕks:* an enactment by M. Cincius, a tribune of the people, A.U.C. 549, which decreed that no man should take any money from a client as a gift or fee in judging a cause.

## CINCINNATI.

CINCINNATI, *sĭn-sĭn-nât'e*, one of the great cities of the United States, the largest in Ohio; near the s.w. corner of that state, in Hamilton co., on the n. bank of the Ohio river, opposite the mouth of the Licking river, and the cities of Covington and Newport in Kentucky. In the midst of a vast fertile region, and half way down the navigable Ohio river, its situation is favorable to growth and prosperity. It lies in a valley surrounded by hills between 400 and 500 ft. in height, forming an amphitheatre of great beauty. The area of the city is 24,320 acres, or about 38 sq. m. Its total extent along the river-front is about 11 miles.

*Topography, etc.*—Cincinnati is built principally upon two terraces, the first about 60 ft., the second about 110 ft. above the ordinary level of the river. By annexation it has now come to include a considerable portion of the hill-region, which forms an amphitheate some 3 m. in diameter e. and w., and 1½ m. in radius n. and s., around the heart of the city. Several suburban villages have thus been taken into the city. Of particular regions of the city, the most distinctive in character is the German district in the n.e. part, called 'Over the Rhine,' and separated from the rest of the city by a portion of the Miami and Erie canal, locally called the Rhine. The West End is the fashionable district. The climate of Cincinnati and the surrounding country is similar to that of other localities of the same latitude and altitude in the Mississippi valley. The annual mean temperature is 56° F.; the mean temperature of Jan. is 35°, that of July 78.5°. The maximum temperature in the summer is usually about 96° or 97°; the minimum temperature of winter is usually about zero. The average annual rainfall is about 45.5 inches. The prevailing winds are from the s.e. The n.w. wind is the forerunner of storms in summer and of cold in winter.

*Parks, etc.*—The largest park is Eden park, 206 acres, about a mile e. of the centre of the city; the large reservoirs of the water-works are located in it. Burnet-woods park, n. of the city, and about 2 m. from its centre, contains 163½ acres. It has a lake of some 3 acres used for boating and for skating. Free open-air concerts are given in this park each week in the season, the funds being provided by an endowment of $50,000 given by a citizen of Cincinnati. Lincoln park, of 10 acres, also has a small lake; this park is in the w. end. In the central part of the city are several small open-air spaces, of an acre or two in area. Cincinnati has a considerable number of cemeteries, of which five are Jewish, five Rom. Cath., and four German. Burials within the city are now forbidden; most of the bodies have been removed from the old burial-grounds, and the sites of some are now occupied by buildings. Of the cemeteries outside of the city the most picturesque is Spring Grove cemetery, 600 acres, consecrated 1845, one of the largest and one of the most picturesque in the United States. It is laid out after the manner of a park, with lawns, trees, lakes, and shrubbery. There is a beautiful

mortuary chapel, of blue limestone with trimmings of sandstone; also a soldiers' monument, consisting of a bronze statue with granite pedestal; and many beautiful private monuments.

*Suburbs.*—Some of the most important of the formerly suburban villages around Cincinnati have been incorporated within its limits. Chief among these are Brighton, formerly the locality of the stock-yards, Fairmount, Mount Auburn at the n., a district of elegant residences, and at the s.e. Fulton and Pendleton. Of the remaining sections, Clifton, on the n., is one presenting great beauty of landscape gardening. Its avenues are lined with fine shade-trees, and some of the finest villas in Cincinnati's environs are to be found in it. It has also a handsome town-hall of brick, containing the public offices and the principal school. Avondale, e. of Clifton, is another beautiful section, containing many fine residences. Mt. Washington, on the n.e., has similar characteristics. Its landscape gardening, and especially its magnolias, are specially notable. Other suburban places are Delhi and Riverside to the w., Madisonville and Linwood to the n.e., St. Bernard to the n., and at a greater distance to the n., Hartwell and Lockwood, Glendale and Reading. On the Kentucky side of the Ohio are the cities of Covington and Newport, which by the census of 1900 had populations of 42,938 and 28,301 respectively, and, though in another state, are virtually suburbs of Cincinnati. They are situated, the former on the w., the latter on the e. side of the mouth of the Licking river. Bellevue and Dayton, in Ky., also suburbs of Cincinnati, extend to the e. of Newport.

*Streets, etc.*—The streets are laid out with great regularity, crossing each other at right angles, and are broad and well-shaded. Originally paved with limestone, if paved at all, they have since been paved with cobble-stones or with artificial preparations. The number of miles of streets, avenues, and alleys is about 650. In the central part of the city the streets running e. and w. are numbered. Fountain Square is regarded as the centre of Cincinnati, whence converging, electric cars run to all parts of the city and suburbs, including those on the Kentucky side, reaching so far as Fort Thomas hill-station, 40 min. distant: inclined-plane elevators give communication with the hill tops on the e., n., and w. Five immense bridges span the Ohio river at Cincinnati, the most important of which is the great suspension bridge connecting Cincinnati with Covington. When built, it was the largest single-span bridge of its class in the world. The towers which sustain the cables are 230 ft. high; they are higher, and each one contains more stone, than the Bunker Hill monument. The distance from those on the Ohio shore to those on the Kentucky shore is 1,057 ft. The bridge has a width of 36 ft., and has double tracks for the street railroads to Covington and Newport, two carriage-ways, and two ways for pedestrians. The total length of the bridge

is 2,252 ft., and its height above low-water mark, is, in the centre, 103 ft.; it was completed and opened to the public, 1867, Jan. 1. The bridge connecting Cincinnati with Newport, Ky., is a mile e. of the suspension bridge, and is 100 ft. above low-water mark. This bridge is of wrought iron, and rests on 11 piers. Including its approaches, its length is 3,090 ft.; the channel span is of 405 ft. Though built for a railroad bridge, it contains ways for foot-passengers, carriages, and horse-cars. A third bridge, of wrought iron, which with its approaches is over a mile in length, is used exclusively for the Cincinnati Southern railroad. It is about 1½ m. w. of the suspension bridge, and connects Cincinnati with Ludlow, Ky. The 11 m. of water-front are occupied by many wharves, or 'landings.' Most of these are private property, and are used for log-rafts, coal-boats and barges, and lumber. Most of those owned by the city are leased, but in the central portion is what is called the 'public landing,' used for general steamboat traffic. Bath-houses are numerous in Cincinnati, and the city maintains a public swimming-bath, moored in the Ohio river during the summer.

*Water-works, etc.*—The water supply of Cincinnati is obtained wholly from the river. The pumping-house, situated on the river-bank, contains 7 large pumping-engines, with a combined pumping capacity of about 87,000,000 gallons a day. These engines lift the water into the old reservoir, comparatively small, and into two new reservoirs in Eden park with a capacity of 100,000,000 gallons. They are constructed in a natural ravine, across the mouth of which an immense wall of solid masonry has been thrown. The old reservoir supplies the s. part of the city, and some of the w. Those in Eden park supply the parts n. of this, up to the hills. A second pumping-house lifts water from these last up to two great boiler-iron reservoirs upon the hills in the n. of the city, by means of which those regions are supplied. There is also a sixth reservoir, on Price's hill, in the w. part of the city. The water-works are owned and operated by the city. Gas is supplied, under some limitations on the part of the city, by a joint-stock corporation, which also in part supplies the suburbs. Part of the city has surface drainage; part is drained by sewers.

*Public and Private Buildings.*—The most imposing of the public buildings of Cincinnati is the United States government building, containing the custom-house, post-office, United States courts, and assistant treasurer's office. It is in the centre of the city, of granite, in the Renaissance style, with four stories and a mansard roof above the sidewalk, and basement and sub-basement below. It is 354 ft. long and 164 ft. wide, and cost about $6,000,000. The county court-house of Hamilton co. is a large and imposing building, 200 ft. square, and four stories high. It is built of Dayton stone, in the Roman Corinthian style, and contains the county courts, the rooms of the county officers, and the law library. The

city building, containing most of the offices of the city government, is also large and handsome. One of the chief ornaments of the city is the music hall and exposition building, in which is held, each autumn, an exhibition of arts, manufactures, agriculture, and other industries, foreign and domestic. The building is of brick, in the modernized Gothic style, 402 ft. long by 316 wide. The music hall seats 4,428 persons, and provides standing room for 3,000 more, besides which the stage will accommodate 1,500. It contains a great organ, of 6,237 pipes, which was built in Boston; but its artistic screen of wild-cherry was designed and carved by residents of Cincinnati. This building cost about $500,000. The masonic temple, of massive freestone, in the Byzantine style, cost about $200,000. Of the theatres of the city, Pike's opera-house is architecturally the most important; it is of fine sandstone, in the Elizabethan style. There are more than a hundred public halls.

*Churches.*—Church Region is a name given to the district in the vicinity of St. Peter's cathedral, there being no less than 10 churches within a radius of one square from the cathedral. The finest church edifice, architecturally, is St. Peter's Cathedral (Rom. Cath.) The main walls of the cathedral are of Dayton limestone, while the basement is of blue sandstone. The steeple, 221 ft. high, is of very graceful proportions. At one end is an altar of Carrara marble, with two angels on each side, the work of Hiram Powers. Opposite is an organ of 2,700 pipes. Finest among the paintings of the cathedral is that of *St. Peter Liberated by an Angel,* by Murillo, taken by the French from the Spaniards during the Peninsular war; it was presented by Cardinal Fesch, uncle of Napoleon, to the bishop of Cincinnati.

*Hospitals, etc.*—The largest hospital of the city is the Cincinnati hospital, one of the largest and best appointed in the world. It occupies two entire squares, and consists of 8 separate buildings, arranged around a central court-yard. Its capacity is large and its staff numerous; it has also an excellent library. It is a charitable institution of the city, but with provision for pay-patients. Of hospitals under private management, the largest is the Good Samaritan hospital, occupying a building originally constructed for a United States marine hospital. It is under the care of the sisters of charity, and can accommodate nearly 200 patients. Other hospitals are St. Mary's hospital, under the care of the sisters of the poor of St. Francis, the Jewish hospital, and the hospital for contagious diseases. Longview asylum for the insane, situated about 8 m. n. of Cincinnati, is one of the largest of such institutions in the w. It is supported by Hamilton co. The city workhouse or prison, an immense structure, 3½ m. from the centre of the city, is one of its most imposing buildings. Near it is a large building of limestone, called the house of refuge, a house of correction for criminal youth of both sexes, between the ages of 8 and 16 years.

The Cincinnati orphan asylum is the oldest charity of its kind in the w.; and there are many other charitable institutions, with buildings of more or less architectural merit.

*Monuments.*—The principal monuments are those in honor of Col. R. L. McCook, of the 9th Ohio regiment, and of Wm. Woodward, founder of the Woodward high-school. The finest out-door work of art with which the city is embellished is the Tyler Davidson fountain, given to the city in memory of a citizen of that name. It stands in the centre of the esplanade, on Fountain square. The base and basin are of porphyry, the fountain itself of bronze, with many figures of high artistic merit, emblematic of the uses of water. The fountain is 38 ft. high, was designed and cast in Germany, and cost $105,000.

*Railroads, etc.*—The railroads entering Cincinnati number 24 in all. Of these the principal are the Baltimore and Ohio, the C. Southern, the Ohio and Mississippi, the C. Hamilton and Dayton, the C. Indianapolis St. Louis and Chicago, the Cleveland Columbus C. and Indianapolis, and the C. and Marietta. The first railroad to the city was built 1842. The C. Southern, running to Chattanooga was built and is owned by the city itself; it is managed for the city by a board of trustees. There are six railroad depots. That of the C. Hamilton and Dayton is large and ornate, and accommodates several other railroads. The Kentucky Central has its depot in Covington.

*Commerce.*—Cincinnati is a port of entry and has some foreign commerce. The first steamboat navigated the Ohio 1812. The imports amount annually to about $3,000,000. The city has a large number of national banks and also several state and savings banks. The exchanges at the U. S. clearing-house aggregate annually over $1,000,000,000.

*Manufactures.*—The Federal census of 1900 reported 5,127 manufacturing establishments, employing $109,582,142 capital and 69,897 persons; paying $77,539,292 for materials used and $33,965,210 for wages; and yielding products of an aggregate value of $157,806,834. The principal articles, according to the value of products, were men's clothing, in factories ($11,950,648); foundry and machine shop products ($11,705,778); packed meat, wholesale ($9,532,057); leather ($9,419,687); boots and shoes, in factories ($8,788,424); and malt liquors ($6,387,383). Other important manufactures were safes and vaults, furniture, soap and candles, saddlery and harness, cigars and cigarettes, and publications.

*Government and Finance.*—The government of the city is vested in the mayor, common council, board of city commissioners, board of police commissioners, board of fire commissioners, and board of education. The board of city commissioners have charge of public works. The police force numbers about 400 men, the fire department about 200. The steam fire engine was first brought into use here. The county returns two members to the United States house of representatives and has cast the majority

of its vote for the Republican party; the city is usually democratic. The assessed valuation of Cincinnati's taxable property in 1906 was over $225,000,000. The net public debt, 1903, was $25,429,763.

*Educational Institutions.*—The system of public schools is extensive. There are about 900 teachers, and nearly 50,000 pupils, upon the average, in daily attendance. There are two high schools, the Woodward High School and the Hughes High School, each established and endowed by wealthy citizens. There is a separate system of schools for colored children, including a high school. An integral part of the public educational system is the University of Cincinnati, which includes an academic department, two medical colleges, one of which has long been famous, a college of dental surgery, and a college of pharmacy. The astronomical observatory, with an 11-inch telescope, is connected with the univ. The Cincinnati Wesleyan College is for young women. There is also a Hebrew college, and two Rom. Cath. colleges, St. Joseph's and St. Xavier's. The Cincinnati college consists now of a law school merely. There are 3 medical schools besides those already mentioned and a theological school, Lane Theo. Sem., Presb. The college of music and the school of design are large and valuable institutions. Cincinnati has achieved great importance as a centre of musical and artistic efforts and is indeed in both these matters among the most noted of American cities. The artistic potteries of the city have an especial reputation.

The most important libraries are the public library, containing about 205,000 books and 30,000 pamphlets, the mercantile library, and the libraries of the professional schools. The Historical and Philosophical Soc. of Ohio has a valuable library. The Zoological Soc. of Cincinnati has a fine and extensive zoological garden. There are 100 periodicals and newspapers published in the city.

*History.*—Cincinnati was settled by a party under Israel Ludlow. The name Losantiville was given to it by a pedantic schoolmaster, being a hybrid word intended to signify 'the town opposite the mouth of the Licking.' The site was probably selected as being on the Indian trail between Detroit, the Great Lakes, and Lexington, Ky., where the trail crossed the Ohio river. The ground on which the city stands was purchased by Matthias Denman, who associated with himself Robert Patterson and John Filson. The latter was killed by Indians while on a visit to the site of the proposed settlement, and Ludlow took his place in the enterprise. The date of the actual settlement is involved in doubt, though 1788, Dec. 28, is generally celebrated as the birthday of the town. By the annexation of Columbia the city obtained the right to date back its settlement to 1788, Nov., as a party had landed and settled there previous to the appearance of Ludlow and his companions. The early growth of the town was impeded by the Indian wars under Harmar, St. Clair, and Wayne. The name Cin-

cinnati was given to the place, 1790, when St. Clair came to it as gov. of the n.w. territory. It was given in honor of the society of the Cincinnati. The first newspaper was issued 1793; the first library was started 1814. Cincinnati was incorporated as a city 1819. Its increase was most rapid in the period preceding 1850. The pork-packing industry developed so largely that Cincinnati was sometimes called 'Porkopolis.'

*Population.*—The population in 1800, only 750, had grown in 1860 to 161,044; (1870) 216,239; (1880) 255,139. Of these, 8,179 were colored, 38 Chinese and Japanese, and 10 Indians. Cincinnati was at the time of that census the eighth city in the Union. Of the total pop., 71,659 were foreign-born. Of these, 46,157 were born in Germany, 15,077 in Ireland, and 3,086 in England. The large proportion of German inhabitants gives a somewhat foreign tone to parts of Cincinnati., especially the district 'over the Rhine.' Pop. (1910) 364,463.

CINCINNATI, *sĭn-sĭn-năt'e* (the Cincinnatuses): society or order in the United States, established by the officers of the revolutionary army in 1783, 'to perpetuate their friendship, and to raise a fund for relieving the widows and orphans of those who had fallen during the war.' It was so named because it included patriots, headed by Washington, who in many instances had left rural affairs to serve their country (see CINCINNATUS). It had no political purpose or bearing whatever. The badge of the society is a bald eagle suspended by a dark-blue ribbon with white borders, symbolizing the union of France and America. On the breast of the eagle there is a figure of Cincinnatus receiving the military ensigns from the senators, with the plow in the background; round the whole are the words, *Omnia reliquit servare rempublicam.* On the reverse, the same hero is represented crowned by fame with a wreath on which is inscribed *virtutis præmium*, etc. As this distinction was made hereditary, it was attacked, as opposed to republican equality. Franklin saw in it the germ of a future aristocracy, and at a meeting in Philadelphia, 1784, several changes were made in the constitution of the society, and in several of the states it was quiety abolished. There are still, however, several state societies, which hold a general meeting by delegates triennially. Washington was chosen its pres.gen., 1787. Robert Burnet, of New York was the last survivor of the original members; he died 1854. The well-known Tammany Society of New York, was organized in opposition to the Cincinnati, which was supposed to represent the more aristocratic classes.

CINCINNATUS, *sin-sin-nā'tus*, LUCIUS QUINTIUS: b. abt. B.C. 519; Roman consul, regarded by the later Romans as the model of antique virtue and simple manners. So far as his character can be discerned tthrough the veil of legend, C. appears to have been a violent patrician. About B.C. 460, he was chosen consul, and two years later, was made dictator. When the messengers from Rome came to

tell Cincinnatus of his new dignity, they found him plowing on his small farm. He soon rescued the consul, Lucius Minucius, who had been defeated and surrounded by the Æqui. Livy's account of the mode in which the deliverance was effected is rejected by Niebuhr, who points out the inconsistencies and impossibilities of the story, and seems disposed to regard the whole as a mere myth. We are next informed that, after a dictatorship of 16 days Cincinnatus returned to his small farm on the Tiber. When 80 years old he was once more made dictator (B.C. 439), and suppressed a threatened plebeian insurrection.

CINCINNUS, n. *sĭn-sĭn′ŭs*, or CICINUS, n. *sĭs-ĭn′ŭs* [Gr. *kikīnŏs*, or *kikinnŏs*, a lock of hair, a curled lock]: applied to the hair on the temples; in *bot.*, an inflorescence; a scorpioid cyme.

CINCTURE, n. *sĭngk′chûr*, or *-chūr* [L. *cinctūră*, a girdle—from *cinctus*, girded: It. *cintura:* F. *ceinture*]: a belt; a girdle; something worn round the body; a carved ring at the bottom and top of a pillar. CINC′TURED, a. *-chūrd*, encircled with a belt or ring.

CINDER, n. *sĭn′dėr* [AS. *sinder*, dross, scum; Icel. *sindr*, dross of iron, slag—from *sindra*, to throw out sparks, to sparkle: Ger. *sinter*, dross of iron: comp. F. *cendre*—from It. *cenĕrĕ;* L. *cinĕrēs*, ashes]: any body or piece of matter thoroughly burned, but not reduced to ashes—thus the refuse of a fire consists of ashes and cinders. CIN′DERY, a. *-ĭ*, resembling cinders. CINDER-BED, in *geol.*, a stratum of the Middle Purbeck series, almost wholly composed of oyster-shells. CINDER-FRAME, n. a frame-work of wire, etc., in a chimney, or in front of the tubes of a locomotive, to prevent the escape of cinders. *Note.*—SINDER is the true spelling and not *cinder;* the spelling *cinder* arose through confusion with F. *cendre* with which it is not connected; the primary sense of *cinder* is, 'that which flows,' hence, 'the dross or slag of a forge'.

CINEMATOGRAPH: see BIOGRAPH.

CINENCHYMA, n. *sĭ-nĕn′kĭ-mă* [Gr. *kinĕō*, I move *eng′chuma*, an infusion]: in *bot.*, laticiferous tissue formed by anastomosing vessels. CINENCHYMATOUS, a. *sī′nĕn-kĭm′ă-tŭs*, having laticiferous tissue.

CINERARIA, n. plu. *sĭn′ėr-ārĭ-ă* [L. *cĭnĕrēs*, ashes]: genus of plants of the nat. ord. *Compositæ*, sub-order *Corymbiferæ*, very nearly allied to *Senecio* (Groundsel, Ragwort, etc.), from which it differs only in having the involucre formed of one row of equal erect scales. The species are numerous, and widely diffused over the world in very various climates. They are annual or perennial herbaceous plants; with simple, generally toothed or sinuate leaves. Many of them are remarkable for a peculiar white down which gives an ashy appearance especially to the lower part of the leaves, whence their name. The flowers

of some are very pretty. *C. maritima*, native of the s. of Europe, and other species, have been much cultivated in gardens and green-houses. Many hybrids and varieties have been produced by cultivation.

CINERARY, a. *sĭn'ĕr-ĕr-ĭ* [L. *cinerārĭŭs*, relating to the ashes of the dead—from *cin'ĕrēs*, ashes]: relating to ashes, applied to sepulchral urns containing the remains of bodies reduced to cinders and ashes. CINEREALS, n. plu. *sĭ-nē'-rĭ-ălz*, vegetable and mineral ashes, and other mineral compounds, used as manures. CINEREOUS, a. *sĭ-nē'rĭ-ŭs*, or CINERITIOUS, a. *sĭn'ĕr-ĭsh'ŭs*, resembling ashes in color; a mixture of white and black; gray. CINE'REOUSLY, ad. *-lĭ*. CINERESCENT, a. *sĭn'ĕr-ĕs'ĕnt*, approaching ash-color or gray.

CIN'ERARY URNS: used by the nations of antiquity to contain the ashes of the dead when gathered from the funeral pile. Previous to being deposited in the urn, the embers were soaked with wine; the urn was then placed in a niche in the family mausoleum. Only the wealthy

Fig. 1.

could afford so expensive a rite. C. U. were either sculptured in marble, or formed of clay or glass. They were not always in the form in which we commonly see them represented on modern tombs. Fig. 1 of the accompanying illustrations is the celebrated cinerary urn known by the name of the Portland or Barberini vase, preserved in the British Museum. This beautiful production of Greek art was discovered about the middle of the 16th c., in a marble sarcophagus in a sepulchre (believed to be that of the Roman emperor Alexander Severus, A.D. 223–235) at Monte del Grano, near Rome. The height of the urn is 10 inches. Fig. 2 is one of the finest specimens yet discovered in the British Isles, and is preserved in

Fig. 2.

the museum of the Royal Irish Acad.; found in a small stone chamber near Bagnalstown, county of Carlow. It is composed of very fine clay, and is but 2⅛ inches high. It contained the burned bones of an infant or very young child.

CINGALESE, a. *sĭng'gă lēz:* of or pertaining to Ceylon.

CINISI, *chē-nē'sē:* town of Sicily, province of Palermo, 14 m. w.n.w. of Palermo, near the coast. It is a neat, cheerful town, with straight regular streets. The Benedictine convent here was once a feudal castle. Pop. 6,000.

CINNA, *sĭn'na,* Lucius Cornelius: Roman noble, one of the principal supporters of the faction of Marius. After Sulla had driven Marius from the city, and before setting out on his expedition against Mithridates, he allowed C. to be elected to the consulship. But C. had no sooner entered upon that office (B.C. 87), than he impeached Sulla, endeavored to form an interest among the citizens who had been added to Rome after the social war, and agitated for the recall of Marius: see Marius. After a cruel massacre of the Roman citizens, in which some of the most eminent statesmen and orators were slain Marius and C. declared themselves consuls. On the death of Marius, which occurred a few days after his usurpation, Cinna made L. V. Flaccus his colleague for that year, and C. P. Carbo for the two succeeding years. In B.C. 84, he prepared to meet Sulla, who was then on his way from the east to take vengeance upon his enemies; but he was slain by his disaffected troops at Brundusium. During his fourth consulate his daughter Cornelia had been married to Julius Cæsar.

CINNABAR, n. *sĭn'nă-bâr* [L. *cin nab'ăris;* Gr. *kinnab'ări,* vermilion]: an ore of mercury, from which almost all the mercury of commerce is obtained. Chemically, it is mercuric sulphide HgS.

It occurs both crystallized and massive, frequently disseminated. Its crystals are six-sided prisms. It varies from perfectly opaque to almost transparent; has an adamantine almost metallic lustre, and a carmine color, with a bright scarlet streak. Its specific gravity is 8–8.2. *Hepatic C.,* so called from its liver-brown color, is a variety containing a little carbon. C. occurs sometimes in primitive rocks, more frequently in those of the coal formation, and sometimes even intimately mixed with coal itself. It is, however, a rare mineral. The C. mines of Almaden, in Spain, have been worked for about 2,300 years, and are still the most productive in the world. At Almaden, the C. is found in a dark-colored slate mixed with quartzite. Next to the mines of Almaden, rank those of Idria in Carniola. C. mines are also in Germany, Hungary, Peru, California, China, Japan, etc. C. is prepared artificially by subliming a mixture of mercury and sulphur, and also by warming a solution of an alkali sulphide with black mercuric sulphide. C. is reduced to powder, is used as a pigment under the name of *Vermilion,* and also in the

manufacture of Chinese red ink. CIN'NABARIN, a. *-in*, of or containing cinnabar.

CINNAMIC ACID *sĭn'ăm-ĭc*, and the CINNAMYL SERIES: $C_6H_5CH:CHCO_2H$, contained in oil of cinnamon, in liquid storax, tolu and Peru balsams and in gum benzoin. It is prepared artificially by heating a mixture of benzaldehyde, sodium acetate and acetic anhydride. Slender, colorless needles, or thick prisms, melts 133°C., boils 300°C. It dissolves readily in hot water, alcohol, etc., but only sparingly in the cold. In general properties C.A. closely resembles benzoic acid. C.A. is one of the most important members of a large class of compounds called the *cinnamyl* derivatives. There may be regarded as ethylene, $H_2C:CH_2$, with one of the hydrogens replaced by phenyl and one or more of the remaining hydrogens by other groups or elements. It is to this ethylene linkage, or *double bond* (see CHEMISTRY), that the C. compounds owe some of their characteristic properties.

CINNAMON, n. *sĭn'nă-mŏn* [Gr. *kinămōmon;* L. *cinnamum*, or *cinnămōmum*—from Heb. *qinnámón*, cinnamon]: the inner bark of a tree that grows in Ceylon, Sumatra, Borneo, etc.; the *Cinnămōmum Zeylan'icum*, ord. *Laurācĕæ*. CINNAM'IC, a. *-năm'ĭk*, of or from cinnamon.

CIN'NAMON: spicy, aromatic, and stimulating bark of certain species of the genus *Cinnamomum*. This genus belongs to the nat. ord. *Lauraceæ*, and was formerly included in *Laurus*. It contains a considerable number of species, natives of tropical and subtropical parts of the east. C. has been in use from the remotest antiquity. It is mentioned in the Old Testament, and by a name almost the same as that which it still bears in most languages. The finest kind is said to be chiefly produced by *Cinnamomum Zeylanicum* (formerly, *Laurus Cinnamomum*), which grows chiefly in the island of Ceylon, although having been introduced into the W. Indies, 1782, with various other plants of the east, it is now cultivated there to some extent. The tree attains the height of 20–30 ft., and is sometimes 1½ ft. in thickness. Its bark is of a grayish-brown color, internally of a yellowish red. The leaves are oval, 4–6 inches long, with a blunt point, and marked with three principal nerves. They have the taste of cloves. The flowers are of a silky gray on the outside, and pale-yellowish color internally. The fruit is somewhat like an acorn in shape; it is a small drupe, brown when ripe. There are two seasons of cinnamon-harvest in Ceylon, the first commencing in April, and the last in November—the former being that in which the chief crop is obtained. The branches of 3–5 years' growth being cut down, the epidermis is scraped away; the bark is then ripped up longitudinally with a knife, and gradually loosened, till it can be taken off. The slices are then exposed to the sun, when, as it dries, it curls up into *quills*, the smaller of which are inserted into the larger, and the whole tied up into bundles of about 88 lbs. each.

C. is examined and arranged according to its quality by persons who are obliged for this purpose to taste and chew it, though in a short time it produces painful effects on their mouths and tongues. The finest C. is yielded by the young branches of the tree, especially by the numerous shoots which spring up from the stump after a tree has been cut down, and which are cut when about 10 ft. long and of the thickness of an ordinary walking stick. The smell, particularly of the thinnest pieces, is delightfully fragrant, and the taste pungent and aromatic, with a mixture of sweetness and astringency. It is used like other spices by cooks and confectioners; in medicine as a tonic, stomachic, and carminative; and also in perfumery. The average quantity annually imported into London is about 500,000 lbs. Its virtues depend chiefly upon the

Cinnamon:
*a*, end of branch, with leaves and flowers; *b*, four-celled anther.

essential oil which it contains (*Oil of Cinnamon*). Oil of cassia is very often substituted for this oil, as cassia —which, however, may readily be distinguished by its mucilaginous taste—is for cinnamon. The root of the C. tree contains camphor. The fruit yields a concrete oil, called *Cinnamon Suet,* which is highly fragrant, and in Ceylon was formerly made into candles, for the exclusive use of the king.—Cassia (q.v.) is the produce of another species of *Cinnamomum—C. Loureirii,* native of Cochin China and Japan, is said to yield a bark even superior to that of *C. Zeylanicum.* A species of C. grows at the elevation of 8,500 ft. in the Sikkim Himalaya; it is thought that it might thrive in England or the United States.

The constituents of oil of C. are various hydrocarbons, eugenol (an alcohol) and cinnamic aldehyde. The oil

of C. is generally prepared in Ceylon by grinding the coarsest pieces of C., soaking them in sea-water for two or three days, and then distilling, the yield is 0.5 to 1.% Two oils pass over, one lighter, the other heavier, than water. Oil of C. varies in color from yellow to cherry-red, the yellow variety being considered the best and is most highly esteemed. *Oil of C. leaf* is prepared from the leaves in Ceylon by a similar process, and is met with in commerce under the name of *clove oil*, which it much resembles in odor. *C. water* is obtained by adding water to C., and distilling a large quantity, or by diffusing the *oil of C.* through water by the aid of sugar or carbonate of magnesia. *Spirit of C.* is procured by acting upon C. with spirit of wine and water, and distilling; and *tincture of C.* by soaking C. in spirit of wine, and straining. The medicinal properties of C., and its preparation, are aromatic and carminative, and it is serviceable in cases of nausea and vomiting, and in cases of flatulence and spasmodic states of the stomach and alimentary canal.

CIN'NAMON-STONE: a precious stone, of which the finer specimens are highly esteemed; it is regarded as a variety of garnet (q.v). Its colors varies from hyacinth red to orange yellow, and when pure it is transparent. It is composed essentially of silica, alumina, and lime. It is found chiefly in Ceylon.

CINNAMOMUM, *sĭn-a-mō'mŭm*, a tropical genus of plants of the laurel family, natives of Asia and the Pacific islands. The genus numbers upward of 50 species, all possessing aromatic volatile oils, that make them valuable articles of commerce. Cinnamon proper is the prepared bark of *C. zeylanicum;* Culiwan bark comes from the *C. culiwan*, and cassia bark from *C. cassiæ.*

CINO DA PISTOIA, *chē'nō da pēs-tō'yâ*, Italian jurisconsult and poet: b. Pistoia 1270; d. there 24 Dec. 1336. He ranks among the best of the early Italian poets, and resembles Petrarca more than any of the other predecessors of this poet. His poems were first published at Rome in 1558 by Pilli. They afterward appeared at Venice increased by a second volume, which, however, was not considered genuine. The most complete edition is that of Ciampi (1812). He published a commentary on the first nine books of the *Codex Justinianus* in 1314.

CINQUE, n. *sĭngk* [O.F. *cinque;* F. *cinq*, five—from L. *quinquĕ*, five]: five; a word used in games. CINQUE-FOIL [L. *folĭum*, a leaf]: a plant belonging to the genus *Potentil'la*, ord. *Rosācĕæ*, sub-ord. *Potentil'lĕæ*, called also *five-finger* from the resemblance of the leaves to the fingers of the hands (see POTENTILLA); in *arch.*, an ornamental foliation consisting of five points or cusps, used in window, tracery, panellings, etc.; often represented in a circular form. CINQUE-PORTS, five harbors or ports on the southern shore of England opposite France. CINQUE-SPOTTED, marked with five spots. CINQUE-PACE, a kind of dance (called also *Galliard*, and *Five-paces*).

CINQUÉ CENTO, *chĭngk'we-chĕn'to* [It., five hundred]: technical, or rather *slang* artistic term, used to designate the style of art which arose in Italy after the year 1500, therefore after the fall of all the great schools. It is sensuous in its character, the subjects chosen being usually borrowed from heathen mythology or history.

CINQUEFOIL. a common bearing in heraldry, usually depicted with the leaves issuing from a ball as a centre point.

Cinquefoil:
In Heraldry.

Cinquefoil:
In Architecture.

The C. of heraldry and of architecture is not derived from any leaf of five leaflets, but, as its perfect regularity of form indicates, from the flower of the plant called C. (*Potentilla*), or other similar flower of five petals or *leaves*. The C. thus closely resembles the rose, with which it would, indeed, be identified, but that a double and not a single rose is chosen for the purposes of heraldry and decorative art.

CINQUE PORTS: five maritime ports of England opposite the coast of France—Sandwich, Dover, Hythe, Romney, and Hastings, said to have been enfranchised in the time of Edward the Confessor. But it was subsequent to the battle of Hastings that the Conqueror, in order that he might wield the resources of the seaports with greater vigor, constituted this whole line of coast into a jurisdiction entirely separate from the counties of Kent and Sussex, and erected it into a sort of county palatine, under a warden or guardian, the seat of whose administration was in Dover castle. The warden, whose office corresponded to that of the ancient count of the Saxon coast (*Comes littoris Saxonici*), exercised jurisdiction, civil, military, and naval, uniting in his single person the functions of sheriff, custos-rotulorum, lord-lieutenant, and admiral. Privileges equal to those originally bestowed on the C. P. were subsequently extended to the so-called *ancient towns* of Winchelsea and Rye; and most of the municipal towns had subordinate ports and towns attached to them, which were called *members*. In place of the Saxon terms of *aldermen* and *freemen*, those of *jurats* and *barons* were introduced, and the latter term has always been applied to the representatives of the C. P. in parliament. The chief function performed by the C. P. in early times consisted in furnishing such shipping as was required for the purposes of the state, the crown having possessed no permanent navy previous to the reign of Henry VII. In the time of Edward I., they were bound

to provide no less than 57 ships, fully equipped and manned at their own cost, though the weight of this heavy burden was somewhat lessened by the provision, that the period of gratuitous service should be limited to 15 days. In consequence of the warlike navy which they were thus compelled to maintain, the C. P. became so confident in their strength, and so insolent and audacious, as not only to undertake piratical expeditions but even to make war and form confederacies as independent states. Previous to the revolution of 1688, the lord-wardens were accustomed to nominate the barons, or parliamentary representatives of the C. P.; but in 1689, an act was passed to 'declare the right and freedom of election of members to serve in parliament for the cinque ports.' The acts of 1832 and 1885 reduced the number of members sent to parliament by the C. P. from 16 to 3, and the municipal reform act has broken up the ancient organization of the ports, and assimilated their internal arrangements to those of other English municipalities. The ancient courts of Stepway, Brotherhood, and Guestling are still occasionally held, but their powers scarcely extend beyond matters of form, such as appointing the barons, who are to exercise an ancient privilege of the ports, which consists in carrying the canopy over the sovereign's head at a coronation. The lord-warden's jurisdiction, in relation to civil suits and proceedings, has been abolished.

CINTRA, *sĭn'trâ* or *sēn'trâ:* small but picturesquely situated town in Portugal, province of Estremadura, about 15 m. w.n.w. of Lisbon. Pop. 5,500. It stands on the declivity of the Sierra de Cintra, and is surrounded by country residences. There is a palace at C., a strange mixture of Moorish and Christian architecture, anciently occupied by the Moorish kings, and subsequently a favorite residence of the Christian monarchs. A charming view of the town and of the sea is to be had from the top of a hill crowned with the ruins of a Moorish castle. On another hill-top stands La Penna, once a convent, now a residence of the king of Portugal, who has restored and given it the outward appearance of a feudal castle. In he neighborhood, also, is what is called the Cork convent, which derives its name from the cells—which are cut out in the rock—being lined with cork to prevent damp.

C. is historically remarkable for the *Convention* concluded here, 1808, Aug. 22, between the English and French, by which the latter agreed to evacuate Portugal. Junot had been defeated by Sir Arthur Wellesley at Vimieira, and had retreated toward Torres Vedras and Lisbon, whither the English under Sir Hew Dalrymple, who had just arrived and assumed the chief command, were preparing to follow them. But the French, despairing of finally holding out, agreed to evacuate the country, on condition of not being treated as prisoners of war, but landed on the coast of France, retaining their arms and effects. This convention excited the greatest public indignation both in the Peninsula and in England. Several English newspapers appeared in mourning, and the minis-

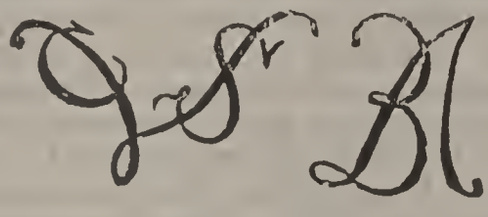
try were obliged to have the generals who signed the convention tried by a court-martial, which, however, resulted in their acquittal. In fact, though the terms of the convention might be advantageous for the French, yet to obtain immediate possession of Portugal and Lisbon, instead of being put to the necessity of a bloody siege for months, was no less advantageous to the English and their allies. Such, at least, was the opinion of two competent judges—Napoleon and Wellington.

CIONE, Andrea di: see Orcagna.

CIOTAT, La, *lâ sē-ō-tâ':* town of France, dept. of Bouches-du-Rhone, on the w. side of a bay in the Mediterranean, about 15 m. s.e. of Marseilles, in the midst of a district clad with olive, orange, and pomegranate plantations. It is well built, and has a good and commodious harbor, formed by a mole, and well defended. The industry consists in cotton-spinning, ship-building, and an active trade in the produce of the district. Pop. 8,900.

CIPER, n. *sī'per* [probably a corruption of *cipher*]: anything of little value; a sham. Ciper-tunnel, a false chimney, placed on a house for ornament or uniformity.

CIPHER, n. *sī'fẽr* [F. *chiffre*, a numeral: OF. *cifre*, zero — from mid. L. *cifra*, nothing. — from Ar. *sifr*, empty a dot]: in *arith.*, the round 0 or nothing; any person or thing of little value; initials of a name intertwined in an ornamental arrangement by which they become also a private mark, adopted by artists and architects as distinctive of their work. That of Albrecht Dürer is well known. Of those given in the illustration, the first is that of Christopher von Sichem; the second, that of Adrian Bolswert. A C. is also a secret manner of writing (see Cryptography): V. to use figures; to practice



Ciphers.

arithmetic; to write in concealed or secret characters. Ci'phering, imp.: N. the art or act of computing by numbers. Ci'phered, pp. *-fẽrd*. Cipher-key, a key which enables the holder to read writings in cipher.

CIPOLIN, n. *sĭp'o-lĭn* [It. *cipollino*, a small onion: L. *cepola*, a small onion, a chive, dim. of *cepa*, an onion]: an Italian marble of white color mixed with pale greenish shadings. It is so called because its veins, like those of onions, consist of different strata, one lying upon another. It does not stand the weather well.

CIPPUS, *sĭp'pŭs* [L. *cippus*, a stake or post]. a small, low column, sometimes without a base or capital, frequently bearing an inscription. Among the ancients the cippus was used for various purposes: when placed on a road it

indicated the distance of places; on other occasions cippi were employed as memorials of remarkable events, as landmarks, and for sepulchral epitaphs; a few are found bearing the letters S. T. T. L. (*Sit tibi terra levis*, 'May the earth be light to, or upon, thee'), on others the inscription Dis Manibus Sacrum. 'Sacred to the divine manes.'

CIPRIANI, *che-pre-â'nē*, Giambattista: 1732 (or 1727) –1785; b. Florence; painter and copper-engraver. When 19 years old he went to Rome, where he chose Correggio as a model, and soon gained high reputation. Invited by certain English residents in Rome, the artist came to London about 1754, where he was one of the first members of the Royal Acad. (founded 1769). He died there. His drawing is correct, his coloring harmonious, his heads have grace and loveliness, and the general style of his works is attractive, although exceedingly conventional. A series of small copperplate illustrations of *Orlando Furioso* well exemplifies his graceful style. Several of Bartolozzi's best engravings are in Ciprani's manner.

CIRCÆA, *sėr-sē'a* [from *Circe*, q.v.]: genus of rather pretty little herbaceous plants of the nat. ord. *Onagraceæ*, with a deeply 2-cleft calyx, a corolla of two petals, and two stamens. C. *Lutetiana* is frequent in shady situations in most parts of Europe. It bears the English name of Enchanter's Nightshade, and in Germany it is called Hexenkraut (witches' herb). The origin of such names is not easily explained. The plant possesses no remarkable properties, being merely a little astringent.

CIRCAR, *sėr-kâr':* Indian word meaning section of a province; applied in English chiefly to the Northern Circars, a former division of the Madras presidency, lying on the e. coast of Hindustan, lat. 15° 40′ to 20° 17′ n. There were five—Guntoor, Rajamundry, Cicacole, Ellore, and Condapilly; the last three corresponded nearly to Masulipatam, Vizagapatam, and Gunjam. The whole area was about 30,000 sq. m., with a pop. of some 3,000,000. The Mohammedans invaded this region 1471, and had conquered much of it by 1550, but were expelled by the princes of Orissa abt. 1571. The Circars were added to Aurungzebe's empire 1687, and afterward granted by Salabut Jung to the French East India Co., whence they passed to the British. Lord Clive obtained four of them by grant and treaty 1765-66 and Guntoor was acquired 1788. The region is fertile, 30 to 40 m. wide, bounded on the w. by mountains, and inhabited almost wholly by Hindus.

CIRCASSIA, *sėr-kăsh'ĭ-a:* division of the w. Caucasus, comprising the n., and a portion of the s. slope of that mountain-range extending in latitude 42°–45° n., and longitude 37°–47° e. See Caucasus.

CIRCASSIAN, a. *sėr-kăsh'ĭ-ăn:* of or from Circassia, in Europe: n. a native of Circassia; in the wide sense the term is applied to all the independent tribes of the Caucasus: in a narrower sense it denotes the tribes who inhabit-

ed the w. part of the range which is called, in consequence, Circassia. The Circassians proper, however, occupied only the n.w. wing of the Caucasus, with the exclusion of Abasia or the portion between the Black Sea in the w. and the lower bank of the river Kuban in the n. They call themselves Adighé, but the Russians and Turks call them *Tcherkesses*. On their conquest by Russia 1864, rather than remain in subjection to that power they chose to emigrate to Turkey, and from 400,000 to 500,000, or nearly the whole nation of 15 tribes, carried this resolution into effect. The greater part of them were distributed over the Turkish possessions in Asia Minor, but others were settled in the mountainous parts of Bulgaria and on the borders of Servia. In their original country they were a marauding and warlike people, among whom it was held more honorable to live by plunder than by peaceful industry. In common with all brigand tribes, the Circassian cherished the most unrestrained love of independence. Their government was a singular compound of constitutionalism and feudalism. There were five distinct ranks in the nation—viz., chiefs or princes, nobles, common freemen, dependents, and slaves. The class of common freemen made up the great mass of the people, they possessed property, and enjoyed the same political rights as the nobles. The fourth class, the dependents, were the vassals of the princes and nobles, whose lands they cultivated, and whose armies they formed. Yet their lord has no right over their persons; for in some cases they and their whole families left him; and they could be sold as slaves only for punishment according to the previous verdict of a national assembly. The fifth class comprised the slaves, or those who had been made captive in war. Their participation in the Bulgarian massacres of 1876 and 1877 showed that they still retain some of the worst traits of the national character.

The Circassian princes and nobles are principally Mohammedans, while the great mass of the people have a religion which is a kind of mixture of Christianity and paganism, in which the celebration of Easter, the sign of the cross, sacred trees, sacrifice, and processions with lights, play an important part. Besides agriculture and the raising of cattle, they possess a few other branches of industry. The Circassians are handsome, strong, active and temperate, and are characterized by the higher attributes of self-dependence, courage, and prudence. As a nation they made their first historical appearance during the middle ages. They are, however, chiefly known through their long struggles to maintain their independence against the aggression of Russia. See CAUCASUS; CAUCASIANS.

CIRCE, *sėr'sē:* fabulous sorceress described by Homer as 'fair-haired, a clever goddess, possessing human speech,' sister of 'all-wise Æætes,' daughter of 'the Sun, who gives light to mortals, and of Perse, whom Ocean begot as his daughter.' Round her palace in Ææa were numbers of human beings whom she had changed into the shapes of

wolves and lions by her drugs and incantations. She changed two-and-twenty of the companions of Ulysses into swine; but that hero, having obtained from Mercury the herb *Moly*, went boldly to the palace of the sorceress, remained uninjured by her drugs, and induced her to disenchant his comrades. He remained with her for a year; and when he departed she instructed him how to avoid the dangers which he would encounter on his homeward voyage.(*Odyssey*, Books x. and xii). Jealous of Scylla, whose love was sought by Glaucus, she poured the juice of poisonous herbs into that part of the sea where her rival was accustomed to bathe, and changed her into a hideous monster (*Metamorphoses*, Book xiv., fables 1 and 6).

CIRCEAN, a. *sẽr-sē′ăn* [L. *Circēus*, pertaining to *Circē*]: pertaining to Circe, the fabled daughter of Sol and Persēis, said to have first charmed her victims and afterward changed them into beasts; fascinating but noxious.

CIRCENSIAN GAMES: see CIRCUS, THE.

CIRCESIUM, *sẽr-sē′shĭ-um:* town of Mesopotamia, where the tomb of the emperor Gordian was situated.

CIRCINATE, a. *sẽr′sĭ-nāt* [L. *circĭnātus*, turned round]: in *bot.*, rolled inward from the summit toward the base like a crosier as the young fronds of ferns. CIR′CINAL, a. *-sĭ-năl*, resembling a circle.

CIRCIUS, *sẽr′shĭ-us:* part of Mt. Taurus; also a rapid and tempestuous wind, frequent in Gaullia Narbonensis, and said to be unknown in any other country.

CIRCLE, n. *sẽr′kl* [F. *cercle*, a circle—from L. *circŭlus*, a circle: Icel. *kringla*, a circle: Gr. *krikos*, a ring; It. *circolo*]: a figure contained by a single curved line called its circumference, every part of which is equally distant from a point within it called the centre; a ring; any round body; the compass or circuit of anything or place; a sphere or station in society, as he moves in the highest circles; a number of persons, as a circle of friends; a series ending where it begins: V. to move round; to encompass; to surround or inclose; to confine or keep together. CIR′CLING, imp.: ADJ. forming in circles. CIR′CLED, pp. *-kld*. CIRCLET, n. *sẽr′klĕt*, a little circle. GREAT CIRCLES, in *astron.*, those circles whose planes pass through the centre of the sphere and divide it into two equal parts. LESSER CIRCLES, those circles whose planes do not pass through the centre of the sphere, and which divide it into unequal parts. HOUR-CIRCLE, a small circle near the n. pole of a terrestrial globe divided into 24 parts, corresponding to the hours in a day. HOUR-CIRCLES, great circles of the celestial sphere. POLAR CIRCLES, the Arctic and Antarctic circles 23° 7′ from the poles.—SYN. of 'circle, n.': ball; globe; sphere; circuit; orb; orbit; ring; circlet; compass; inclosure; assembly; friends.

CIRCLE: a curved line enclosing a portion of a plane, such that all points of it are equally distant from a fixed point within it; the locus of points of a plane equi-distant

from a fixed point of the plane; the fixed point is called the *centre* of the circle; the portion of the plane enclosed, or more properly the measure of it, is called the *area*.

The line-segment connecting any two points of a circle is called a *chord;* if a chord passes through the centre it is a *diameter*. Any straight line connecting the centre with a point of the circle is a *radius*. A radius is thus one-half of a diameter. Any straight line cutting a circle in two points is called a *secant;* if the straight line produced would meet the circle in only one point, that is, if the two points of intersection coincide, it is a *tangent*. Any limited portion of a circle is an *arc*. The figure formed by two radii and the arc intercepted between them is called a *sector* of the circle.

The centre of a circle is a centre of symmetry for the curve, and any diameter is an axis of symmetry, since

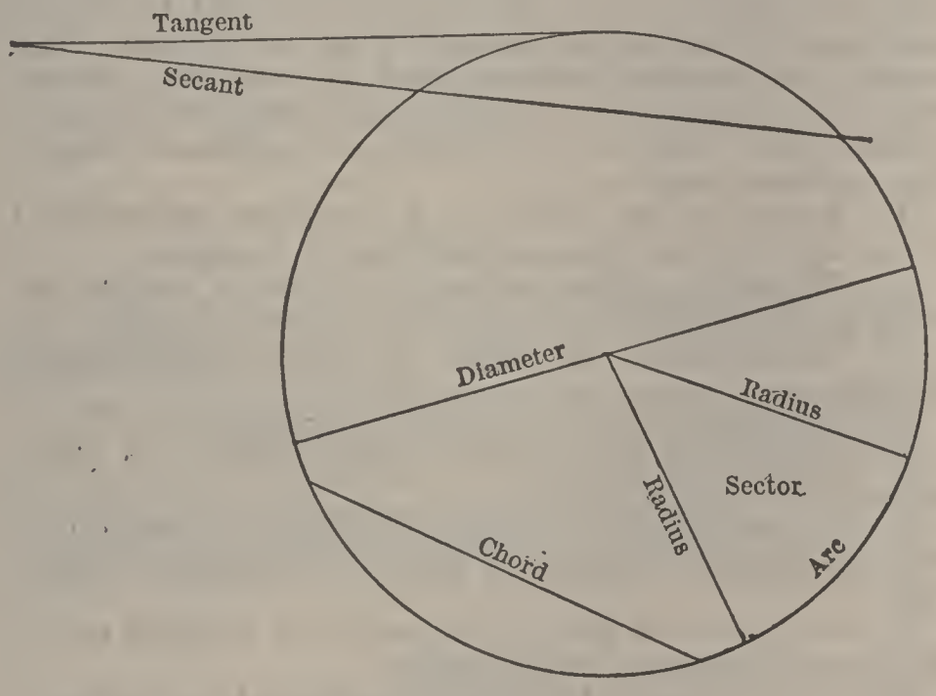



Fig. 1.

lines drawn perpendicular to the diameter meet the circle on opposite sides at equal distances from the diameter.

A plane section of a sphere is a circle and the section of a right circular cone parallel to the base, or perpendicular to the axis, is a circle. The circle is thus one of the family of curves called conic sections.

A *great circle* on a sphere is one whose plane passes through the centre of the sphere; a *lesser circle* or *small circle* on a sphere, one whose plane does not pass through the centre. *Polar circles*: the arctic and antartic circles on the terrestrial sphere. *Osculating circle*, or *circle of curvature*, is a circle which touches a curve at a particular point and lies nearer to the curve at that point than any other circle; the circle having at least three consecutive points in common with the curve. The radius of the circle of curvature at any point is called the *radius of curvature* at the point.

The *director circle* of an ellipse or hyperbola is the locus of the intersection of tangents which are at right angles to each other.

*Nine-point circle*, the circle passing through the mid-points of the sides of a triangle, the extremities of the three perpendiculars drawn from the vertices to the opposite sides, and the mid-points of the segments of these three perpendiculars between the point where they meet and the vertices of the triangle.

In elementary geometry, a circle is commonly defined as the portion of a plane enclosed by a line such that all points of it are equally distant from the centre. The boundary line is then called the *circumference*. In common usage, however, and in all more advanced mathematics the circle is the line and not the portion of a plane enclosed by it. The terms circle and circumference are frequently used synonymously; or circumference is used to denote the length or numerical measure of the curved line. The circle is the principal curve studied in elementary geometry and its properties are developed in the text-books in great detail. Only a few of the more important properties are here given.

1. Angles at the centre of a circle are proportional to the arcs opposite them, or on which they stand.

2. The angle at the centre of a circle is double the angle at the circumference standing on the same arc.

3. All angles at the centre or at the circumference standing on the same arc are equal.

4. The angle in a semi-circle is a right angle.

5. The perpendicular bisector of a chord of a circle passes through the centre.

6. A circle may be described passing through any three points of a plane which are not in the same straight line.

7. The ratio of the circumference of a circle to its diameter is the same for all circles.

This ratio cannot be exactly expressed in ordinary numerals, but it is approximately $\frac{2}{7}\frac{2}{7}$ or more nearly 3.14159 (see QUADRATURE OF THE CIRCLE). It is conveniently expressed by the symbol $\pi$, that is if $C$ represents the circumference and $d$ the diameter, $C = \pi d = 2\pi\ r$ where $r$ represents the length of a radius.

8. The angle at the centre of a circle standing on an arc equal to the radius is the same for all circles.

For, in consequence of (1) this angle $A$ is to four right angles as the arc $r$ on which it stands is to the whole circumference; or $A$: 4 rt. angles $= r : 2\pi r$. Hence $A =$ 2 rt. angles divided by $\pi$, a value which is independent of the size of the circle. This angle is taken as the unit for the measurement of angles in theoretical discussions and is called a *radian*. Thus a right angle equals $\pi$ radians.

An arc of a circle is measured by taking as unit that arc which subtends an angle of one degree at the centre. Thus an arc is said to be $q$ degrees in length when it stands opposite an angle at the centre containing $q$ de-

grees. The measure of one quarter of the whole circle, or a Quadrant, is 90 degrees, since it stands opposite a right angle at the centre. The measure of the whole circle is 360 degrees.

The area of a circle equals $\pi r^2$. The area may be thought of as made up of an indefinitely large number of triangles whose vertices are at the centre and whose bases make up the circumference. The altitude of each triangle is then $r$, so that the area of all the triangles equals $\frac{1}{2}r2\pi r = \pi r^2$.

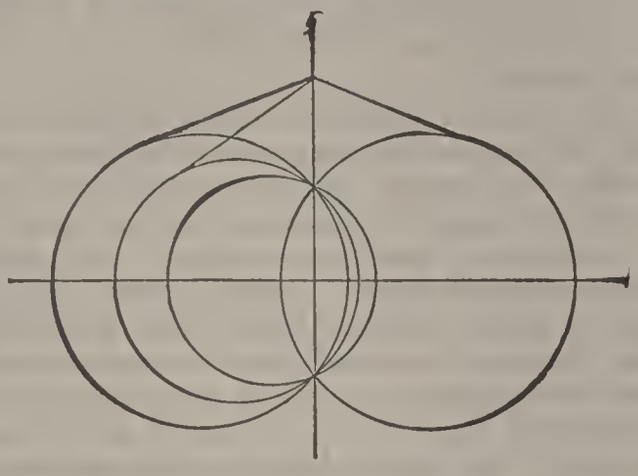


Fig. 2.

Thus the areas of two circles are to each other as the squares of their radii, or what is the same thing, as the squares of their diameters.

*Squaring a circle* is finding a square whose area is equal to that of a given circle, or what is the same thing, finding the numerical value of $\pi$. This has been proved to be impossible (see QUADRATURE OF THE CIRCLE).

The *radical axis* of two circles is the straight line drawn through their two points of intersection. The circles of

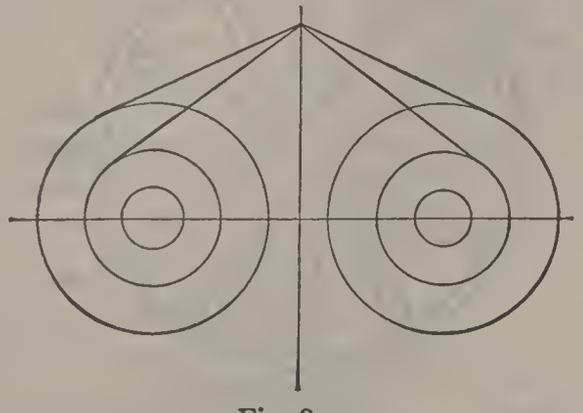


Fig. 3.

a plane all of which pass through the same two points, are said to form a *co-axial* system. The centres of these circles all lie on a straight line perpendicular to the radical axis, midway between the two common points:

For a co-axial system of circles the following properties hold:

1. The difference of the squares of the distances of the

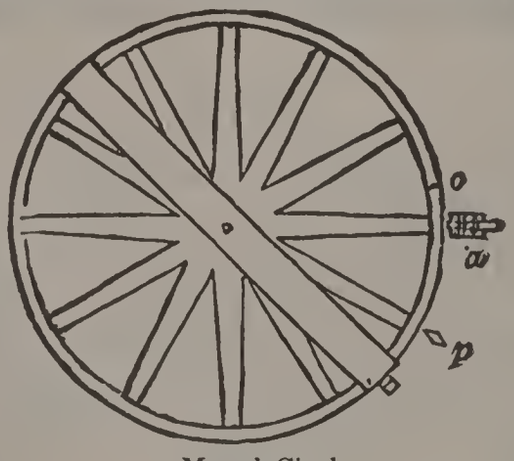
centres of any two circles of the system from the radical axis is equal to the difference of the squares of their radii.

2. The tangents drawn to any two circles of the system from a point on the radical axis are equal in length.

Circles fulfilling these two properties are said to be co-axial whether their points of intersection are real or imaginary. When the points of intersection are real the system takes the form of Fig. 2; when they are imaginary it takes the form of Fig. 3. The radical axis of two circles may then be defined more generally as the locus of points such that the tangents drawn from them to the circles are equal.

CIRCLE, MAGIC: space in which sorcerers were wont, according to the ancient popular belief, to protect themselves from the fury of the evil spirits they had raised. This circle was usually formed on a piece of ground about nine ft. square (in the East, seven ft. appears to have been considered sufficient), in the midst of some dark forest churchyard, vault, or other lonely and dismal spot. The circle was described at midnight in certain conditions of the moon and weather. Inside the outer circle was another somewhat less, in the centre of which the sorcerer had his seat. The spaces between the circles, as well as between the parallel lines which inclosed the larger one, were filled 'with all the holy names of God,' and a variety of other characters supposed to be potent against the powers of evil. Without the protection of this circle, or passing outside its limits, the magician, it was believed, would have been carried off by the spirits.

CIRCLE, MURAL: instrument for determining the meridian altitude or zenith distance of a star. It consists of an astronomical telescope firmly fixed to a graduated cir-




Mural Circle.

cle, which moves about a horizontal axis, fixed in a strong vertical wall running n. and s. In the common focus of the eye-piece and object-glass of the telescope is a system of cross-wires (spider lines are generally used for the purpose), one being horizontal, and five vertical, with equal spaces between. The line joining the optical centre of the object-glass with the intersection of the horizontal and middle vertical wires, is called the line of *collimation* of

the telescope, and when the instrument is in perfect adjustment, this line moves in the plane of the meridian.

Besides the above-mentioned fixed wire there is a movable one, called a micrometer wire, which is moved by means of a screw, remaining always parallel to the fixed horizontal wire.

If the instrument be so adjusted that the image of a star, while passing across the middle vertical wire in the field of view shall at the same time be bisected by the fixed horizontal wire, the star is at that moment in the line of collimation of the telescope. It is therefore at that moment in the meridian, and its meridian zenith distance is the angle through which the circle would have been turned from the position it had when the line of collimation of the telescope pointed to the zenith. There is a fixed pointer, *p*, for the purpose of approximately reading the instrument. If the instrument were accurately adjusted, so that *p* was opposite the zero point of the circle, when the line of collimation of the telescope pointed to the zenith, the arc *op*, in the above position of the instrument, would be the meridian zenith distance of the star.

Great nicety is required in 'reading' the instrument; i.e., in determining exactly the arc through which the circle has moved in bringing the telescope from the vertical to any other position, such as that represented in the figure. The rim is usually graduated at intervals of five minutes; and the eye could determine only the division nearest to the fixed index *p*. But by means of a 'reading microscope,' or micrometer (q.v.), fixed opposite to the rim, as at *a* (the distance between the axis of which and the point *p* is constant), the portion of the interval to the nearest division on the rim can be read to seconds. There are usually six such microscopes fixed opposite different points of the rim; and the 'reading' of the instrument is the mean of the 'readings' of all the microscopes. This tends to eliminate errors arising from imperfect graduation and adjustment. If the instrument is properly adjusted, the zero point of the circle will be at *p* when the line of collimation of the telescope points to the zenith. In practice, however, this is not always accurately, or even approximately, the case. As is now to be shown, it is of no consequence, as the final result of every observation is the *difference* between two readings.

It is evident that the difference between any two readings of the instrument will represent the angle through which the line of collimation of the telescope moves in passing from one position to the other. It remains to show how fixed a point, viz., the nadir (q.v.), is observed, and then how an observation is taken of the star itself in its meridian passage.

We must explain here that the fixed horizontal wire in the eye-piece of the telescope, in the instruments as now used, is only an *imaginary* line which determines the line of collimation of the telescope. It coincides with the position of the micrometer wire, when the screw-head of the micrometer marks zero.

To observe the nadir, a trough of mercury is placed underneath the instrument, and the telescope is turned so as to look vertically downward into it. An image of the system of cross-wires which is in the common focus of the object-glass and eye-piece, will be reflected back again to nearly the same focus. Looking into the telescope, the observer now adjusts it by means of a tangent screw till the reflected image of the horizontal wire coincides with the real one. The final adjustment is perhaps most delicately effected by turning the screw-head of the micrometer which moves the wire itself. When they coincide, the line joining the centre of the object-glass of the telescope with the intersection between the middle vertical and horizontal micrometric wire, will be vertical. Now, the angle between this and the line of collimation of the telescope, which joins the optical centre of the object-glass with the intersection of the middle vertical and imaginary axed horizontal wire, will, if the micrometer is in proper adjustment, be at once read off the micrometer screw-head. The instrument being clamped as above adjusted, the microscopes are read off, and the reading of the micrometer screw-head above mentioned being added to or subtracted from this reading, as the case may be, the nadir reading of the instrument is determined. The zenith reading therefore, which differs from it by 180°, is at once known.

Again, to observe a star in the meridian, the instrument is previously adjusted so that the star, in passing the meridian, shall pass over the field of view of the telescope. As the image of the star approaches the centre of the field, the observer adjusts the telescope by the tangent screw, so as very nearly to bring the image of the star to the horizontal wire. Finally, just as the star passes the middle vertical wire, he bisects the image of the star with the horizontal wire by a touch of the micrometer screw-head. The circle being now clamped (or made fast), the 'reading' is determined as before by reading the pointer and microscopes, and adding or subtracting, as the case may be, the reading of the micrometer. This reading now subtracted from the zenith-reading gives the meridian zenith distance of the star; and this, again, subtracted from 90°, gives its meridian altitude above the horizon.

At the royal observatory (q.v.) of Greenwich, the principal observations are now made by an instrument which combines the mural circle with the transit instrument: see TRANSIT INSTRUMENT.

CIRCLE, QUADRATURE OF: see QUADRATURE.

CIRCLE SQUARING: see QUADRATURE.

CIRCLEVILLE, *sĕr'kl-vĭl:* city, county seat of Pickaway co., O., on the Scioto river, and the Ohio canal, 25 m. s. of Columbus by the Scioto Valley railroad, 104 m. e.n.e. of Cincinnati by the Cincinnati and Muskingum Valley railroad. It was founded 1810 on the site of an aboriginal circular fort, which was surrounded by two walls 20 ft. high,

with a ditch between; close by was a square fortification with sides 55 rods in length. Camp Charlotte, where Lord Dunmore made a treaty with the Indians 1774, was 7 m. s.e. and Logan's famous speech was made 4 m. south. Circleville has a large pork-packing industry, manufactures of agricultural implements, furniture, etc., and several mills and factories. It is the centre of a rich farming region and a market for broom-corn, which is largely raised in the neighborhood. Pop. (1910) 6,744.

CIRCUIT, n. *sėr-kĭt* [F. *circuit*—from L. *circu'ĭtus*, a going round in a circle—from L. *cĭrcum*, round; *itum*, to go]: the act of moving or passing round; the space inclosed by a circle; a ring; the journey of British judges in holding courts in different parts of a country; the tract of country so visited. England and Wales, with the exception of the county of Middlesex, are divided for judicial purposes, into seven circuits, which the judges of the high court of justice visit four times a year in pairs for the purpose of adjudging civil and criminal causes. The number of circuits was reduced from eight to seven by authority of the judicature act, 1875. They are—the Northern, Northeastern, Midland, Southeastern, Oxford, Western, and North and South Wales. Trial by jury of issues of fact within London and Middlesex are held at what are called the London and Middlesex sittings. Criminal charges within that and surrounding districts are disposed of at sessions held monthly at the central criminal court. 'These judges of assize came into use in the room of the ancient justices of eyre, *justiciarii in itinere*, who were regularly established, if not first appointed, by the parliament of Northampton, A.D. 1176, in the twenty-second year of Henry II., with a delegated power from the king's great court, or *aula regia*, being looked upon as members thereof.' —Stephen's *Com.*, iii, 415. See ASSIZE and NISI PRIUS. —IRELAND is divided into the Northeast, the Northwest, the Home, the Leinster, Connaught, and Munster circuits. For the Scottish circuits see JUSTICIARY COURT. CIRCUIT, v. to move in a circle; to go round. CIRCU'ITOUS, a. *-kū'ĭ tŭs*, going round in a circle; not straight or direct. CIRCU'ITOUSLY, ad. *-lĭ*. TO MAKE A CIRCUIT, to go round.

CIRCUIT, ELECTRIC: the complete path which any electric current traverses in going from any given point through the path and back to given point. See ELECTRICITY, PRINCIPLES OF.

CIRCUIT, INDUCTIVE: any electrical circuit which has in it loops or coils which set up a magneto-motive-force that produces magnetic lines, whenever current traverses the circuit. See ELECTRICITY, PRINCIPLES OF.

CIRCUIT, MAGNETIC: the complete path traversed by magnetic lines set up by any source of magneto-motive force, the lines passing from any given point on the path, through the path and back to the given point. See ELECTRICITY, PRINCIPLES OF.

CIRCUIT COURT: next in rank to the United States

supreme court. There are nine circuits, each consisting of several states, and each is allotted to one of the nine justices of the supreme court, who must attend at least one term of court in each district of his circuit every two years. A special circuit judge also is appointed and resident in each circuit. Courts are held by either of these, or by the two together, or by a district judge alone or sitting with either of them. Courts may be held at the same time in different districts of the same circuit. These courts have original jurisdiction, concurrently with those of the states, in civil suits in law or equity for more than $500 between citizens of different states, or where an alien is a party or the United States plaintiff, as well as in revenue cases and some in bankruptcy, and in some criminal cases concerning persons denied citizenship under state laws, or offenses against the United States. Their appellate jurisdiction extends to admiralty and maritime cases, to civil actions referred from the dist. courts, to patent cases, and some others. Several states have circuit courts of their own.

CIRCULAR, a. *sėr'kū-lėr* [L. *cir'cŭlus*, a circle (see CIRCLE)]: pertaining to a circle, or in the form of a circle; round; ending in itself; addressed to a number or circle of persons: N. a written or printed letter or note sent to a number or circle of persons. CIR'CULARLY, ad. *-lī*. in a circular manner; ending in itself. CIRCULARITY, n. *sėr'kū-lăr'ĭ-tĭ*, a circular form or character. CIR'CULATE, v. *-lāt* [L. *circulātus*, spread or gathered in a circle]: to spread or move in a circle; to spread; to pass from one place or person to another; to be diffused; N. a recurring or repeating decimal or part of a decimal. CIR'CULATING, imp.: ADJ. moving or passing round; repeating; diffusing; current, or that constitutes currency. CIR'CULATED, pp. CIR'CULATOR, n. one who. CIR'CULA'TION, n. *-lā'shŭn*, the act of moving round; a series repeated in the same order; the act of going and returning; currency of money. CIRCULAR NOTES, series of notes for various amounts, payable on demand, issued by a banker for the convenience of travellers in other countries, which may be cashed at many places as money is required.—SYN. of 'circulate, v.': to propagate; spread; disseminate; diffuse.

CIRCULAR NOTES: bank-notes specially adapted for the use of travellers in foreign countries; and being, in fact, bills personal to the bearer, they are believed to be more safe as travelling money than ordinary notes or coin. Circular notes are furnished by the chief banking-houses. Those who wish to obtain them determine beforehand what sum of money they will require on their journey, and that they pay to the banker, who, in exchange, gives circular notes to the amount, the series of notes being of varying values. With these notes is given a 'letter of indication.' This letter is addressed to foreign bankers, requesting them to pay the notes presented by the bearer, whom they name, and to aid him in any way in their power. By way of verification, the bearer appends his signature,

and the letter is complete. On the back of the letter there is a long list of foreign bankers, extending all over Europe, any of whom will cash one or more of the circular notes on being presented and indorsed by the bearer; the indorsement being of course compared with the signature on the letter of indication, which is at the same time exhibited by the traveller. In paying these notes, the money of the country is given, according to the course of exchange, and free of any charge for commission. For security in case of theft or loss the letter and the notes should not be carried together. These circular notes are doubtless a safe and convenient species of money, exchangeable in almost every town visited; and if any remain over on coming home, they will be taken back at their value by the banker who issued them. There are, however, certain drawbacks connected with these notes. In many instances, there is a difficulty in finding the banker named; for foreign bankers generally occupy obscure apartments several stories high, and often in dingy out-of-the-way alleys. To discover them, a commissionaire may be necessary. Then, in some instances, it happens that the banker jealously scrutinizes the bearer, asks to see his passport, and takes a note of the hotel at which he lodges; all which proper precautions against roguery are disagreeable to some persons. Further, the circular notes are ordinarily of a thick, stiff paper, which does not well fit into a purse or pocketbook. On these accounts, the careful class of tourists who expect to keep to the main thoroughfares of France, Germany, and Belgium, often prefer banknotes or gold coin. See CREDIT, LETTERS OF.

CIRCULAR PARTS: name given to a rule in spherical trigonometry, invented by Lord Napier.

CIR'CULATING DEC'IMALS: see DECIMALS.

CIRCULATING LIBRARY: collection of books lent out on hire—circulated from hand to hand. The plan of lending books on hire is not new. Chevillier, in his *Originis de l'Imprimerie de Paris* (4to, 1694), mentions that, in 1342, a century before the invention of printing, a law was framed in Paris to compel stationers to keep books to be lent on hire, for the special benefit of poor students and others: see E. S. Merryweather's entertaining work, *Bibliomania in the Middle Ages* (London, 1849); which mentions such libraries in the middle ages at Paris, Toulouse, Vienna, and other places. This writer, quoting from Chevillier, gives a list of books so lent out, with the prices for reading them. The books all are of a theological or classical kind. Among them is the Bible, the perusal of which is set down at 10 sous. 'This rate of charge,' it is added, 'was also fixed by the university, and the students borrowing these books were privileged to transcribe them, if they chose; if any of them proved imperfect or faulty they were denounced by the university, and a fine was imposed upon the book-seller who had lent out the volume.

## CIRCULATING LIBRARY.

By whom the modern circulating library was projected, there is no record. All that can be given are a few facts on the subject. It is known that Allan Ramsay, author of *The Gentle Shepherd* a bookseller in Edinburgh, established a circulating library in that city about 1725. Fond of dramatic literature, Ramsay appears to have incurred some local obloquy by lending out plays; and his wish to introduce a taste for the drama into Edinburgh may accordingly have suggested the notion of a circulating library. Be this as it may, the library which he began was continued through various hands for above a hundred years. At Ramsay's death, 1758, his library was sold to a Mr. Yair, whose widow carried it on till 1780, when it was bought by Mr. James Sibbald, an ingenious inquirer into Scottish literary antiquities. Sibbald lived some years as a literary man in London, during which period, beginning with 1793, the circulating library was carried on, subject to an agreement, by a Mr. Laurie. Sibbald afterward resumed the direction of the library, which he considerably extended. At his death, 1803, his brother attempted to carry it on; but not being successful in his management, he disposed of it in 1806 to Alexander MacKay, who by the acquisition of various other libraries, greatly enlarged the collection, under the name of the Edinburgh circulating library. He retired 1831, when this extensive collection of books was broken up and sold by auction.

There are several circulating libraries in London, claiming to be of old date, but probably not so early as 1725. In a late reprint of an old advertisement, are 'Proposals for erecting a Public Circulating Library in London,' under date 1742, June 12. This library was to be established in some convenient place at or near the Royal Exchange; and the subscription was to be a guinea per annum. Two of the present circulating libraries are believed to be descended from this primitive stock. So numerous had circulating libraries become in the early years of the present century, that they absorbed whole editions of novels and romances prepared for the purposes by a London publishing establishment, designated the Minerva Press. The issue of cheap books and periodicals about 1832 (see BOOK-TRADE) seriously damaged the circulating library system. The vast increase of the reading public in recent times, and the continually augmenting number of new and popular works of a respectable class, have restored prosperity to circulating libraries, especially in London, where some of them are on a surprisingly gigantic scale. To one library alone, as many as 100,000 new books are said to be added annually, and of kinds very different from those of the old Minerva Press school. For an annual subscription—usually of a guinea—a number of new books may at all times be procured, and kept for a specified period. Books no longer in demand are sold at a reduced prices.

For the circulation of books among the members of pri-

vate associations, see BOOK-CLUB; and for the circulation of books in rural districts by means of libraries shifted from place to place, see *Itinerating* LIBRARIES.

CIRCULATION, in Anatomy and Physiology: term used to designate the course of the blood from the heart to the most minute blood vessels (the Capillaries, q.v.), and from these back to the heart.

The subject may be considered under two divisions: I. Anatomy of the organs of circulation. II. Physiology of the circulation.

I. *Anatomy of the Organs of Circulation.*—The organs of C. consist of the heart, arteries, veins, and capillaries. The course of the blood through these organs will be best elucidated by the aid of a diagram, equally applicable for all other mammals as well as for man, and for birds. The shaded part of fig. 1 represents structures filled with venous blood, while the unshaded portion represents structures in which arterial blood occurs. In this diagram we observe a dotted circle, representing a closed bag or sac, termed the pericardium, and inclosing the four cavities *c*, *v*, *c′*, *v′*, of which the heart is composed. Two of these cavities, *c* and *c′*, are for the purpose of receiving the blood as it flows into the heart, and are termed the *auricles;* while the two cavities *v* and *v′* are for the purpose of propelling the blood through the lungs and general system respectively, and are termed the *ventricles.* The vessels that transport blood into the auricles are termed *veins*, and the vessels through which the blood is driven onward from the ventricles are known as *arteries* (q.v.). The diagram further shows that what we commonly term the heart, is in reality *two distinct hearts* in apposition with each other—one, shaded in the figure, which is called the right, or venous, or pulmonary heart; and the other, unshaded, which is called the left, or arterial, or systemic heart—the last name having been given to it because the blood is sent from it to the general system; as the right heart is termed pulmonary from its sending blood to the lungs. We will now trace the course of the blood as indicated by the arrows in this diagram, commencing with the right auricle, *c*. The right auricle contracting upon the venous blood with which it is filled, drives its contents onward into the right ventricle *v*,

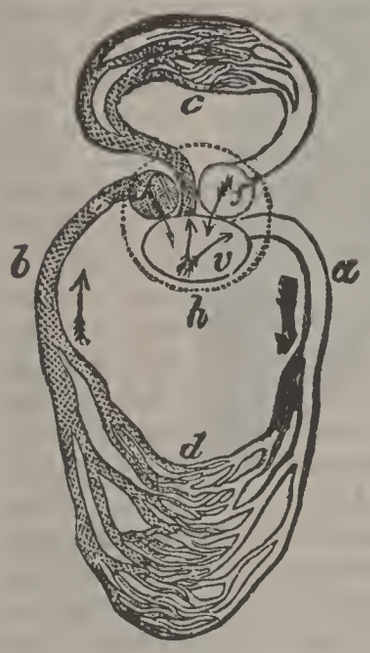



Fig. 1.—Mode of Circulation in man and other mammals, and in birds: *h*, heart; *v*, right ventricle; *v′*, left ventricle; *c*, right auricle; *c′* left auricle; *a*, aorta; *d*, vena cava; *e*, greater circulation; *b*, smaller circulation; *f*, pulmonary artery; *g*, pulmonary veins.

through an opening between these two cavities, called the right auriculo-ventricular opening, which is guarded by a valve, named the tricuspid—from its being composed of three pointed membranous expansions—which prevents the regurgitation of the blood from the ventricle into the auricle. The ventricle *v* being now filled, contracts, and as the blood cannot return into the auricle, it is driven along the shaded vessel, the dividing branches of which are indicated by *f*. This vessel is known as the pulmonary artery, and conveys the blood to the lungs. At its commencement, it is guarded by valves, termed, from their shape, the semilunar pulmonary valves, which entirely prevent the blood which has once been propelled into the pulmonary artery from reentering the ventricle. The pulmonary artery gradually divides into smaller and smaller branches, which ultimately merge into capillaries. In these capillaries which are freely distributed over the interior of all the air-cells (of which the lung is mainly composed), the venous blood is brought in contact with atmospheric air, gives off its carbonic acid gas and absorbs oxygen, by which processes it is converted into arterial blood. The capillaries, *b*, in which the blood is arterialized, gradually unite to form minute veins which, again, join to form larger vessels, until finally the blood is collected into a small number of vessels known as pulmonary venis, which pour their contents into the left auricle. Only one such vessel, *g*, is shown in the figure, but the actual number of the pulmonary veins is four—viz., two from each lung. The blood, now freed from its carbonic acid, enters the left auricle, *c*, which by its contraction propels it into the left ventricle,*v'*, through the left auricle-ventricular opening. This opening, like the corresponding one in the right heart, is guarded by a valve which, from its form, is termed the mitral valve, and which entirely prevents the reflux of the blood. The left ventricle, *v*, contracts and drives its contents into the large artery, *a*, which represents the aorta—the great trunk which, by means of its various branches (none of which are indicated in the diagram), supplies every portion of the body, from the crown of the head to the soles of the feet, with pure arterial blood. From the aorta and its various subdividing branches the blood passes into the capillaries, *e*, which permeate every part of the system; in these capillaries it undergoes important changes, which may be considered as almost exactly the reverse of those which occur in the pulmonary capillaries; it parts with its oxygen, becomes charged with carbonic acid, and, as it leaves the capillaries, and enters the minute veins formed by their union, presents all the characters of venous blood. The veins gradually unite till they form two large trunks, termed the superior and inferior *venæ cavæ*, which pour their contents into the right auricle—the point from which we started. Only one of these great veins, *d*, is indicated in the diagram. Thus there is a complete double C.—a lesser C. effected by the blood in its passage from the right to the left heart through the lungs; and a greater C effected by

the blood in its passage from the left heart through the system generally to the right heart.

From the above simple ideal scheme, we proceed to the consideration of the more complicated arrangements by which the C. is actually effected in man and the higher animals.

The heart is situated in very nearly the centre of the cavity of the chest, or *thorax*, between the lungs. Its form is somewhat conical, the lower end tapering almost to a point, and directed rather forward and to the left. This lower portion alone is movable, and, at each contraction of the heart, it is tilted forward, and strikes against the

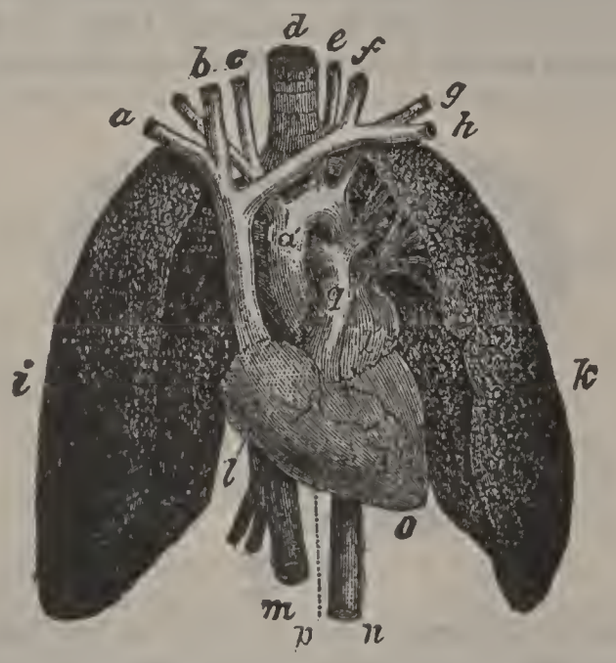



Fig. 2.—The Lungs, Heart, and principal Blood-vessels in Man:

*a h*, veins from the right and left arms; *b*, *f*, right and left jugular veins, returning the blood from the head and neck—these four veins unite to form a single trunk, the *vena cava superior*, which enters the right auricle, *l*; *c*, *e*, the right and left carotid arteries, the latter rising directly from the arch of the aorta, *a'*, the former from a short trunk called the *arteria innominata*; *g*, the left subclavian artery, rising directly from the aorta while the right subclavian springs from the *arteria innominata*; *d*, the trachea or windpipe; *i*, *k*, the right and left lungs; *l*, *l'*, the right and left auricles; *p*, the right ventricle, *o*, the apex of left ventricle; *m*, the inferior or ascending *vena cava*; *n*, the descending aorta, emerging from behind the heart; *q*, the pulmonary artery.

walls of the chest between, in man, the fifth and sixth ribs, or a little below the left nipple. All the large vessels connected with the heart—the venæ cavæ, the pulmonary artery, and the aorta—arise from its base (see fig. 2), and serve, from their attachment to the neighboring parts, to keep that portion of it fixed. Indeed, these vessels may be regarded as suspending the heart in the cavity, which is lined by a smooth serous membrane which, near the top, is reflected downward over the roots of the great vessels, and covers the whole of the outer surface of the heart. These two smooth serous surfaces—one lining the cavity, the other investing the heart—are kept moist by a fluid which

they secrete, and by this arrangement friction is to its minimum. The cavity or sac in which the heart lies is called the pericardium. Like all serous membranes, it is a closed sac, and, as it may not be easy for the non-professional reader to understand the relative position of the heart, we may observe that the head in an old-fashioned double night-cap—which is a closed bag—is in much the same position as the heart in the pericardium; it is inside the night-cap, but not in the cavity which intervenes between its two layers.

The substance of the heart is essentially muscular. The fibres run in different directions, longitudinally and transversely, but most of them obliquely; many pass over the apex from one side of the heart to the other; and all are so involved as to render it very difficult to unravel them. In

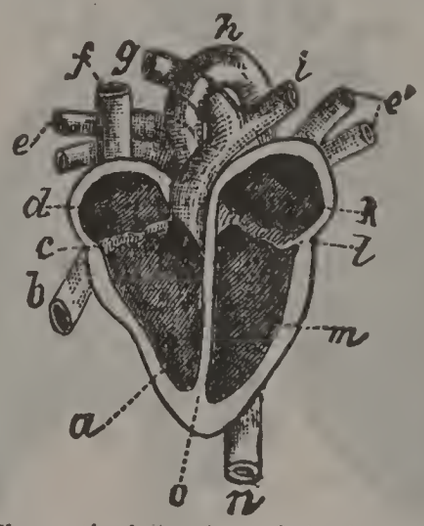



**Fig. 3.**—Theoretical Section of the human Heart:

*b*, the two *venæ cavæ*, opening into *d*, the right auricle; *c*, the tricuspid valve; *a*, the right ventricle, from which proceeds the pulmonary artery, dividing into branches *g* and *i*, going to the right and left lung respectively; *e*, *e'*, the pulmonary veins (two from either lung), entering into the left auricle, *k*; *l*, the mitral valve; *m*, the left ventricle, from which proceeds the aorta, whose arch is indicated by *h*, and the descending portion by *n*, none of its branches being indicated in this figure; *o*, the partition, or *septum*, between the right and left hearts.

consequence of this arrangement the fibres, by their contraction, seem simultaneously to diminish each cavity in all directions, and thus serve most efficiently to drive the blood onward. The size of the heart has been estimated as about that of the closed fist of the same individual. Its weight, as compared with that of the body, is about 1 : 160 in the male, and 1 : 150 in the female. The average weight of the male heart is a little more than 11 oz., and that of the female heart a little above 9 oz.

In our sketch of the organs of C. (fig. 1), we have indicated the different cavities into which the heart is divided. In fig. 3 there is represented a section of the human heart. The two theoretical hearts, which were nearly in contact in fig. 1, are here fused into a single organ, but the division of the two sides is still complete, so far as the

functions of the heart are concerned. We see a vertical partition separating the entire heart into two halves, which are very similar to each other. In the accompanying figure (fig. 4) we have a representation of all the valves —the auricles having been removed so as to give a distinct view of the upper surface of the ventricles. The tricuspid and mitral valves, which are entirely closed—the two ventricles contracting simultaneously—are represented by 1 and 3 respectively; while the pulmonary and aortic semilunar valves, are indicated by 4 and 5. The walls of the ventricles are much thicker than those of the auricles, and those of the left ventricle are about four times as thick as those of the right; the amount of muscular tissue being, in all these cases, proportional to the work to be done. The heart receives the arterial blood necessary for its own

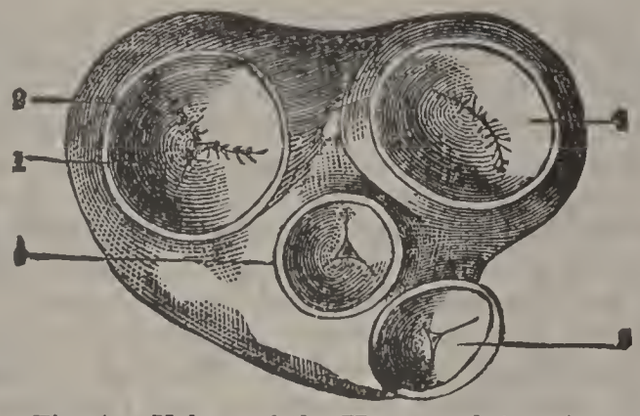



Fig. 4.—Valves of the Heart and Arteries:

Upper surface of the Heart, the Auricles having been removed. In this figure the heart is turned in such a position that the anterior surface lies lowermost; hence the apparent discrepancy of the *right* auriculo-ventricular orifice lying on the *left* side of the diagram.

1, Right auriculo-venricular orifice, obliterated by the tricuspid valve; 2. fibrous ring surrounding this orifice; 3, left auriculo-ventricular orifice, surrounded by a ring, and closed by the mitral valve; 4, orifice leading into the aorta from the left ventricle closed by the semi-lunar valves; 5, orifice leading into the pulmonary artery from the right ventricle, also provided with three semi-lunar valves.

nutrition from the coronary arteries, two trunks which are given off by the aorta immediately above the semilunar valves; and this blood having discharged its function, is carried back to the right auricle by the coronary venis.

Since all the arterial blood leaves the heart through the aortic opening, in tracing its course to the different parts of the system, we obviously have only to follow the aorta to its final branches. Referring to the article AORTA, where the principal branches of that great organ are indicated, it is sufficient, without further anatomical details, to say that the final ramifications of the arteries distribute the arterial blood to the Capillaries (q.v.), which pervade every part of the body.

The *veins*, like the arteries, are found in nearly every tissue; they commence by minute plexuses (an anatomical term for a network-like arrangement), which communicate

with the capillaries. Branches from these plexuses uniting together, form small venous trunks, which by joining, increase in size as they pass on toward the heart. If we except certain venous structures (called *sinuses*) occurring in the interior of the skull, we may divide the veins into two sets—the *superficial* or *cutaneous*, and the *deep veins*.

The deep veins accompany the arteries, and are usually inclosed in the same sheath of cellular tissue with them. In the case of the smaller arteries, they generally exist in pairs, one on each side the artery, and are called *venæ comites*, while the larger arteries have usually only one accompanying vein.

The superficial veins occur immediately beneath the integument; they not only return the blood from the skin and adjacent structures, but communicate with the deep veins.

All the veins finally unite into two large trunks, termed the *superior* and *inferior vena cava*, which open into the right auricle of the heart; the superior vena cava being formed by the union of the veins which return the blood from the head and neck (the jugulars) with those which convey it from the arms (the subclavians), as shown in Fig. 2; while the inferior vena cava (also shown in the same figure) receives the blood from the lower extremities, the trunk, and the abdominal and pelvic viscera.

The arterial system presents no valves, but the veins contain a great number of valves, which are formed by a doubling of their lining membrane, and resemble pocket-like folds or pouches, which allow the blood free passage toward the heart, but prevent its reflux.

There is one part of the venous C. which, from its great importance, requires special notice—viz., that of the venous blood of the spleen, pancreas, stomach, and intestinal canal. The blood supplied to these organs by the celiac axis and the two mesenteric arteries is not returned directly to the vena cava, and thence to the heart, as occurs in other parts of the system. The veins of these organs unite together into one large vessel, called the *vena porta*, which, entering the liver, branches out again like an artery, and finally subdivides into a capillary network that permeates the whole of its mass. It is from the venous blood, as it traverses these capillaries, that the bile is secreted. This portal blood, together with the blood of the hepatic artery, after it has become venous, is finally carried off by the hepatic veins (usually three in number), which open into the inferior vena cava.* Thus the blood which flows through the portal vein passes through two sets of capillaries, between the period of its leaving the aorta and entering the vena cava.

The double C. which we have described, is the course performed by the blood from the time of birth during the

*In fishes, not only the blood of the intestines, but that of the posterior part of the body, enters this portal system, which is distributed in this class of animals both to the kidneys and to the liver.

whole period of life. The C. of the blood, however, begins before birth—indeed, at a very early period of intrauterine or fœtal existence; and the fact that before birth the lungs do not act as organs of respiration, induces a very important modification in the course of the blood in fœtal life, for which, see FŒTUS.

Turning from the C. in man, we may notice some of the leading peculiarities of the C. in other animals. In the warm-blooded animals—mammals and birds—the course of the blood is *essentially* the same as in man, for in all these animals the heart, like the adult human heart, possesses four distinct cavities. In form, however, it presents certain peculiarities in some of the mammalia. It is generally more rounded and less elongated than in man. In the cetacea, it is very broad and flat; and in at least one genus, the dugong, the right and left ventricles are separated by a deep fissure. In some herbivorous mammals, as in the ox, sheep, goat, etc., a cruciform ossification, called the bone of the heart, is found in the septum between the ventricles. In the ornithorhynchus, or duck-billed platypus, the heart,

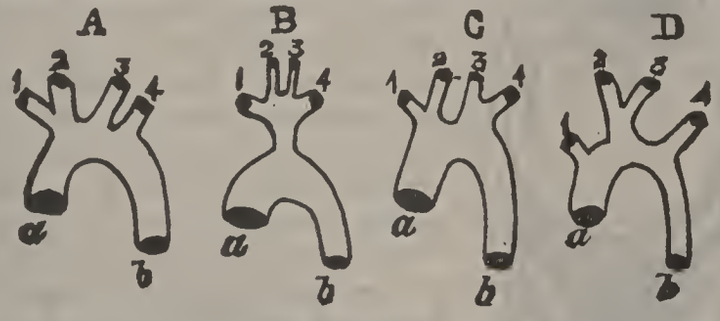



Fig 5.—Diagram of certain varieties in the Origin of the Main Trunks from the Arch of the Aorta:

A. Man; B, the Ruminants; C, Dolphin and Bats; D, the Elephant. 1, the right subclavian; 2, right carotid; 3, left carotid; 4, left subclaivn; *a*, ascending aorta; *b*, descending aorta.

in some respects, resembles that of birds. Certain varieties are found also in the distribution of the blood vessels. Thus, while in man the subclavian and carotid arteries arise on the right side from a short common trunk given off by the aorta, and on the left side arise directly from the aorta, we find several varieties of this arrangement in the mammalia. In the horse and the ruminants, the aorta divides at once at its origin into an anterior trunk, which gives off the carotid and subclavian arteries of both sides, and a posterior trunk for the thoracic and abdominal aorta. In the dolphin, and in some—if not all—of the bats, two short trunks (*arteriæ innominatæ*) arise, and give off each a carotid and subclavian on either side. In the elephant, both carotids are given off from a single common trunk, situated midway between the two subclavians. All these, and other varieties which might be noticed, are occasionally found in man; and it may be laid down as a general rule, that when any abnormal arterial distribution is detected in the human subject, it represents the normal type in some lower mammal.

A very remarkable peculiarity in the distribution of the vascular system (both arteries and veins) appears in the cetacea and other diving animals, in which the respiration, and consequently the arterialization of the blood, is temporarily stopped. Various arteries of the trunk here assume a ramified and convoluted form, so as to constitute reservoirs capable of holding a large quantity of pure blood; while the venous trunks show similar dilatations, capable of receiving and retaining for a considerable time the impure blood which has circulated through the system, and of thus preventing the right heart from being overcharged with venous blood during the temporary suspension of respiration. By means of these arterial reservoirs, the cetacea can support life under water for a quarter of an hour, or even longer.

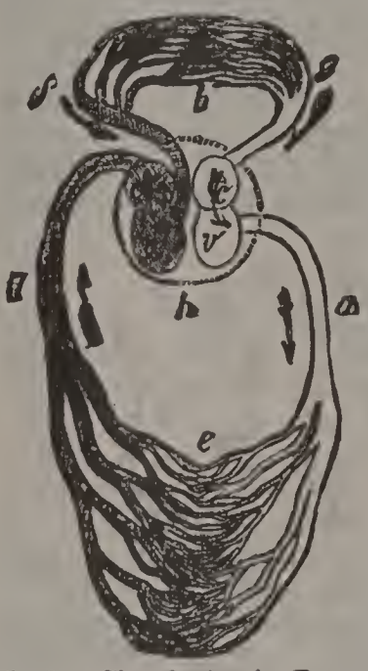



Fig.6.—Circulation in Reptiles.

*h*, heart, inclosed in pericardium; *f*,*f'*, right and left auricles; *v*, single ventricle; *a*, aorta; *b*, vena cava; *c*, smaller circulation; d, greater circulation.

Another peculiarity is that occasionally a large artery will divide into a great number of smaller vessels which again reunite to form a single trunk. An arrangement of this kind is known as a *rete mirabile*, and a good example of it occurs within the skull in long-necked grazing animals, the object being to check too strong a current of blood to the brain.

In birds, the heart is usually of a very large size, as compared with the bulk of the body. The trunk of the aorta is extremely short, and divides into three main branches, the central one forming the descending aorta, while the two lateral ones give off the carotid and subclavian arteries on either side. The branches of the latter give an abundant supply of blood to the powerful thoracic muscles by which the wings are moved.

In the class of reptiles, there is not a complete double C., a mixture of arterial and venous blood being sent both to the lungs and to the general system. In Fig. 6, the general nature of the C. in this class is typically represented. The heart consists of two auricles and one ventricle. The impure blood which has circulated through the system is conveyed by the vena cava into the right auricle, whence it passes into the common ventricle. At the same time, blood which has been aerated in the lungs is poured into it from the left auricle; hence the ventricle contains an admixture of venous and arterial blood. As both a pulmonary artery and an aorta are given off at the ventricle, the latter by its contractions simultaneously drives the portion of its contents to the lungs, and another to the general system.

In this way, a semi-oxygenated blood is transmitted to the various parts of the body, the only pure blood being that which is contained in the left auricle, and in the veins opening into it.

Although the above may be regarded as the *general* type of the circulating apparatus in reptiles, yet there are many modifications of it, which connect it on the one hand (in the case of the *Perennibranchiate amphibia*, such as the axolotl, proteus, etc.) with that of fishes, and on the other hand (when there is a more or less perfect separation of the ventricular cavity, as in the crocodiles) with that of birds and mammals.

In the class of fishes, the circulating apparatus is far simpler than in reptiles. The heart has only two cavities, an auricle and a ventricle, and is traversed solely by venous blood; hence it is analogous to the right side of the mammalian heart. Venous blood is brought by veins which correspond with our *venæ cavæ*, from all parts of the system, and enters the auricle (see Fig. 7); from the auricle, the blood passes into the ventricle, which is of great muscular strength; and the ventricle propels its contents through a vessel which corresponds with our pulmonary artery, and which, dividing on either side into four or five branches, goes to the gills, in the capillaries of which it becomes oxygenated, by means of the air that is diffused through the water. From the filaments and fringe-like structures of the gills, it is at length collected into a large trunk, commonly called the dorsal vessel, but analogous to the aorta of mammals and birds, inasmuch as it supplies the whole body with arterialized blood. After passing through the systemic capillaries, the blood returns in a venous condition to the heart, and the above process is repeated. Although the heart is simpler than in reptiles, the C. is in one sense of a higher character, so far as pure arterial (not mixed) blood is here conveyed to all parts of the system; hence, probably, the far greater muscular energy of fishes may be explained.

Turning to the C. in the invertebrate animals, in the mollusca we find hearts of varying complexity, *usually with one or two auricles, and one ventricle; but in all cases, the auricle or auricles receive aerated blood from the respiratory organs, and pass it to the strongly muscular ventricle, which propels it over the body. The heart is therefore a *systemic* heart. There seem to be no capillaries in these animals, excepting in the respiratory organs; the blood leaving the open ends of the arteries, passes into the interstices (*lacunæ*) of the parenchyma of the body, from whence

*In some of the ascidians and in salpa, the following remarkable phenomenon occurs: The heart, which is extremely simple, and of course without valves, at definite intervals (of about 20 minutes) reverses the direction of its current. Before the heart changes the direction of its contractions, it remains still for a short time, and the blood-currents in the body are thus slackened in their course before they receive an impulse in the opposite direction. The vessels entering and leaving the heart thus act alternately as an aorta and as a vena cava.

it is taken up by the open mouths of the venous radicles; hence this kind of C. is called lacunary.

In the crustacea, the form of the heart and the number of its orifices presents several modifications; the following is, however, the *typical* mode of C. of these animals. The heart, here a single cavity, is sometimes round, and sometimes long and tubular, and is the point of departure of the arterial system, which consists of trunks emerging in various directions. The blood returning from the arteries does not enter into distinct veins, but into irregular excavations in the tissues, which are termed venous sinuses: from these venous sinuses it passes to the gills, whence it is returned to the heart in an aerated state by the branchio-cardiac canals; so that here, as in the mol-

Fig. 7.—Circulation in Fishes:

*h*, heart, inclosed in pericardium; *a*, the auricle; *v*, the ventricle; *c*, the capillary circulation in the gills; *d*, the dorsal artery; *e*, the systemic capillaries; *b*, the veins.

Fig. 8.—Circulation in the Crustaceans:

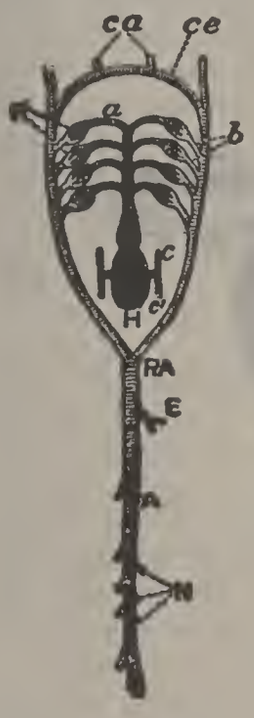
*h*, the heart and pericardium; *a*, the arteries; *c'*, the systemic capillaries; *c*, the branchial or respiratory capillaries; *b*, the branchio-cardiac vessels.

lusca, the heart is systemic. It is unnecessary to notice the comparatively imperfect C. in insects and animals lower in the scale than those already considered.

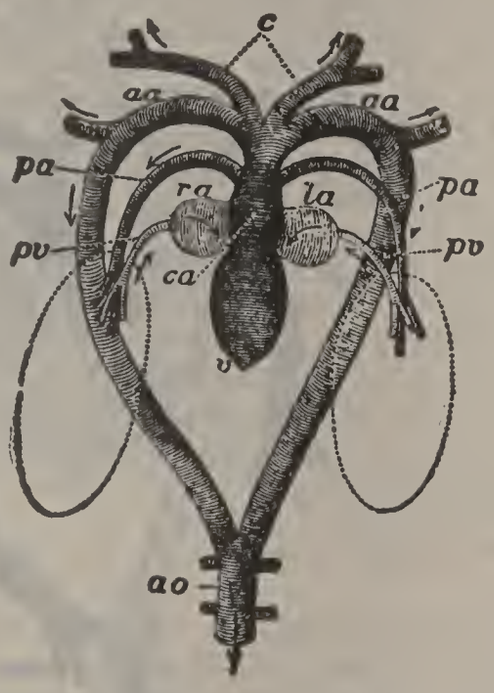
II. *Physiology of the Circulation*, including—1. The flow of blood through the heart; 2. The phenomena of the arterial C.; 3. The phenomena of the capillary C.; 4. The phenomena of the venous circulation.

1. Direct observation and experiment clearly show that the muscular contraction of the heart is the principal source of the power by which the blood is propelled in its course. This action of the heart may be observed by opening the chest of a living animal, deprived of sensation

and motion by curare, and in which artificial respiration is kept up. It is then seen to consist of two motions—first, a contraction or systole of the auricles, and second, a corresponding contraction of the ventricles. The contraction of the auricle immediately precedes that of the ventricle, and the systole of each cavity is directly followed by its diastole or relaxation; there is then a brief period of repose, the heart exhibiting little or no motion. At the moment of the systole of the ventricles, the apex of the heart is tilted forward, causing a pulsation against the ribs that can be felt externally.




Circulation.—Arterial System of Fish: H, Heart; *c* and *c'*, Anterior and posterior cardinal veins; *a*, Branchial arteries; R, Capillaries of the branchial vessels; *b*, Branchial veins; *ce*, Head circle; *ca*, Carotids; RA, Root of the aorta; A, Dorsal aorta; E, Artery to viscera (cœliaco mesenteric); N, Renal arteries.

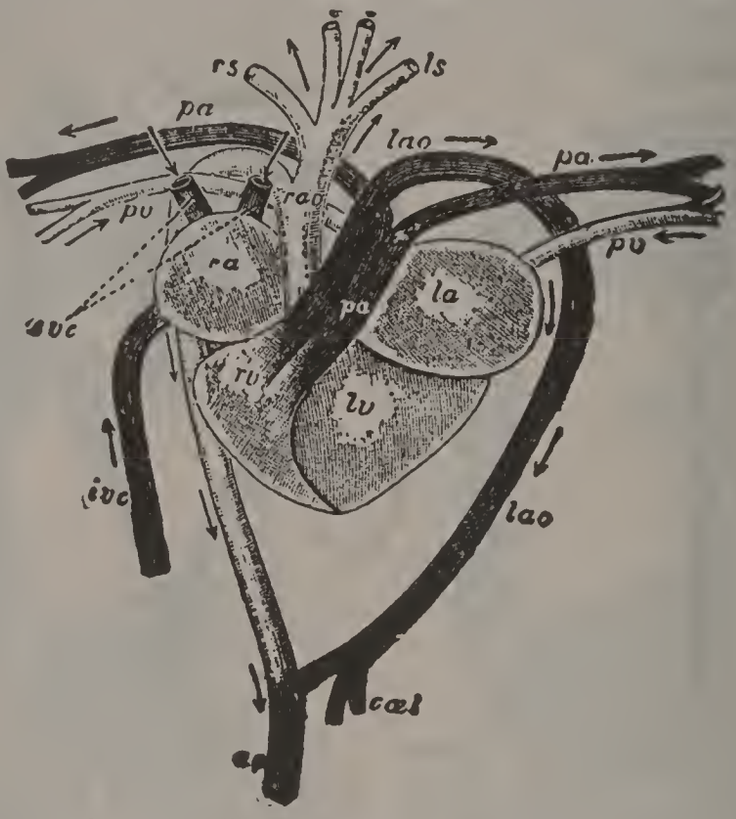



Circulation.—Arterial System of Amphibian: *ra*, Right auricle; *la*, Left auricle; *v*, Ventricle; *ca* Conus arteriosus; *c*, Carotid arteries; *aa*, Aortic arches, *ao*, Dorsal aorta; *pa*, Pulmonary artery; *pv*, Pulmonary vein; *ra*, receives venous blood from body; both the pulmonary arteries enter *la*.

The force exerted by the left ventricle has been so very variously estimated, that we must regard this point as still unsettled. The number of contractions of the heart of an adult in a minute is about 70 or 75; it is, however, liable to great variations (see PULSE). The sounds accompanying the heart's action, may be readily heard by applying the ear either directly or through the medium of the stethoscope to the cardiac region (see HEART, SOUNDS OF THE).

2. The arteries exercise a vast influence on the movement of the blood through them, in virtue of two properties which they possess—viz., elasticity and contractility. These two endowments are not equally and uniformly possessed by the whole arterial system—elasticity (the property by which the interrupted or discontinuous force of the

heart is made equable and continuous) existing chiefly in the larger trunks; while contractility—which is more required for regulating the flow of blood to particular parts is most marked in the smaller vessels. The rate of movement of the blood through the arteries in man can be only roughly calculated from experiments on animals. It has been calculated that in the carotids of mammals, the average velocity of the blood-stream is about 12 inches per second; the velocity is greater in arteries lying near than in those at a distance from the heart; it is not increased by an augmentation in the number of pulsations, but is greatly




Circulation of a Reptile (Tortoise): *ra*, Right auricle; *la*, Left auricle; *rv*. Right (venous) portion of ventricle; *lv*, Left (arterial) portion of ventricle; *lao*, Left (venous) aortic arch; *pa*, Pulmonary artery; *rao*, Right (arterial) aortic arch; *rs*, *ls*, Branches to fore-limbs; *c*, *c*, Carotids; *pv*, Pulmonary veins; *svc*, Superior vena cava ; *ivc*, Inferior vena cava; *ao*, Dorsal aorta; *cœl*, Cœliac artery to viscera.

augmented by an increase in the volume of the blood, and lessened by its diminution.

3. It has long been a debated point, whether the capillary C. is influenced by any other agency than the contractility of the heart and arteries. It was formerly believed that the action of the heart alone was sufficient to send the blood through the whole circuit, but now it is thought that the movement of the blood through these vessels is due not solely to the heart; that there is what may be termed a capillary power. The following are a few of the facts proving this: 1. On watching the C. in the web of a frog's foot, it is at first seen to go on with perfect regularity. After a time, however. various changes are observed, which cannot be attributed to the heart. such

as alterations in the size of some capillaries, and in the velocities of the currents passing through them, and occasionally even a reversal in the direction of some of the lesser currents. 2. In cold-blooded animals, the movement of the blood in the capillaries continues long after the excision of the heart. 3. Actual processes of secretion not unfrequently continue after death; sweat, for instance, may be exuded from the skin, and other secretions may be formed by their respective glands, which could not take place if the capillary C. had stopped. 4. Cases occasionally occur in which a fœtus without a heart is produced, and yet in these cases most of the organs are well developed.

4. It is usually estimated that the venous system contains from two to three times as much blood as the arterial. We have already noticed the occurrence of valves in the venous circulation. Their object is evidently to prevent the reflux of blood; hence they are of important use in the maintenance of this part of the circulation. They are most abundant where there is much muscular movement. The movement of blood through the veins is undoubtedly due mainly to the *vis a tergo* resulting from the contraction of the heart and arteries. This is much assisted in many parts of the system by the constantly recurring pressure of the adjacent muscles upon their trunks. The movement of inspiration, by causing a comparative vacuum in the chest, is believed also to assist the flow of venous blood to the heart. The contractility of the veins in man is too slight to produce any marked effect on the propulsion of the current. In connection with this article: see ARTERY: CAPILLARIES: PULSE: VEIN.

CIRCULATION OF SAP in Plants: its ascent from the root to the leaves and bark, and its partial descent after the elaboration which it undergoes in these organs. The sap drawn from the ground by the roots (see OSMOSE) ascends in exogenous plants, which have hitherto been principally the subjects of examination, through the more recent parts of the woody tissue, and especially through the alburnum. The descent of the sap takes place chiefly through the liber or inner bark. It appears certain also that, on its return to the root, only a small portion is excreted, and that the greater part ascends again, readapted to the use of the plant by the excretion which has taken place. Much of the sap which is taken up by the roots is, however, thrown off in perspiration by the bark and leaves. The sap is also laterally diffused through the cellular tissue of plants, and very interesting observations have been made by Schultz and others on peculiar movements of the elaborated or descending sap (*latex*). Many physiologists dislike the term *circulation* applied to sap, as suggesting a closer analogy than really exists to the circulation of the blood in animals. See PLANT: LEAVES: SAP.

CIRCULUS IN PROBANDO: A fallacious form of reasoning in which the conclusion reached is actually

employed as one of the premises. The fallacy is sometimes known as argument in a circle, and in logic, as one of the forms of *petitio principii*.

CIRCUM, *sėr'kŭm*, or CIRCU, *sėr'kū* [L. *circum*]: a Latin prefix signifying 'around; round about,' etc.

CIRCUMAMBIENT, a. *sėr'kŭm-ăm'bĭ-ĕnt* [L. *circum*, round about; *am'bĭens*, or *ambĭen'tem*, going round, surrounding]: surrounding; inclosing, or being on all sides, as the air about the earth. CIR'CUMAM'BIENCY, n. *-ĕn-sĭ*, the act of surrounding.

CIRCUMAMBULATE, v. *sėr'kŭm-ăm-bū-lāt* [L. *circum*, round about; *ambŭlātus*, walked] to walk round about. CIR'CUMAM'BULATING, imp. the going or walking round instead of going straight to it. CIR'CUMAM'BULATED, pp. CIR'CUMAMBULA'TION, n. *-lā'shŭn*.

CIRCUMBENDIBUS, n. *sėr'kŭm-bĕn'dĭ bŭs* [*circum, bend*—a coined word with a L. termination], in *familiar language*, a round-about way.

CIRCUMCELLIONES, n. *sėr-kŭm-sĕl-lĭ-ō'nēz* [L.L. *circumcellio*, a wandering about from cell to cell—from L. *circum*, about; *cella*, a cell]: a sect of the Donatists in Africa, 4th c., named from their habit of roving from house to house, plundering. They went about in predatory gangs, chiefly of rustics, pretending to reform public manners and redress grievances. They manumitted slaves without the consent of their masters, forgave debts, etc. In their fanatical zeal for martyrdom they courted death by insulting the Pagans at their festivals, and destroyed themselves in various ways. Later, they took the name of Agonistici.

CIRCUM-CENTRAL, n. in *geol.*, applied to strata dipping to a common centre; bowl-shaped.

CIRCUMCISE, v. *sėr'kŭm-sīz* [L. *circum*, round about; *cæsus*, cut]. to cut off the foreskin, as a religious rite among the Jews and other Eastern nations; to purify the heart. CIR'CUMCI'SING, imp. CIR'CUMCISED, pp. *-sĭzd*. CIR'CUMCI'SER, n. one who. CIR'CUMCIS'ION, n. *-sĭzh'ŭn*, the act or ceremony of cutting off the foreskin (*præputium*), a rite widely diffused among ancient and modern nations. The prevalent idea among Christians was (and perhaps still is), that the rite originated with Abraham, who (as recorded in Gen. xvii. 9–14) was commanded by God to circumcise himself and his whole household, and to transmit the custom to his descendants. But, as Jahn (*Biblische Archäologie*, Vienna, 1797–1800) acutely observes, this is inconsistent with the very terms in which the command is expressed, these terms presupposing a knowledge of the rite on the part of Abraham. That it existed previously to the time of the patriarch, however, seems to be indisputable. The researches of modern scholars prove that the Egyptians, for instance, were in the habit of circumcising long before Abraham was born. Rawlinson, in a note to his version of Herodotus, remarks that 'cir-

cumcision was already common in Egypt at least as early as the fourth dynasty of kings, and probably earlier, long before the birth of Abraham, or B.C. 1996.' The testimony borne by the monuments of Upper and Lower Egypt (consult Sir Gardiner Wilkinson's *Manners and Customs of the Ancient Egyptians*) is to the same effect, and apparently conclusive. Another argument which has been adduced against its Abrahamic origin is the fact of its being so extensively practiced. At the present day, it may be traced almost in an unbroken line from China to the Cape of Good Hope. It is also a usage in many of the South Sea Islands, and the followers of Columbus were astonished to find it existing in the W. Indies, and in Mexico. Recently, too, it has been ascertained to have been long practiced by several tribes in S. America. Such being the case, many scholars hold it impossible to suppose that the origin of so universal a rite can be traced to a single Semitic nation, more especially when that nation was peculiarly averse to intercourse with other nations and in other respects exercised no overt influence on their customs. Whether, as Jahn supposes, Abraham obtained his knowledge of circumcision from the Egyptians, is not known. It appears, however, that the Canaanites among whom he came to reside were not circumcised, for we read of the Prince of Shechem and his people undergoing the operation, that the former might obtain the hand of Dinah, daughter of Jacob; and the institution of it in the family of Abraham was probably sufficient to mark off that family from the surrounding tribes. In the case of Abraham and his descendants, the rite acquired a religious significance. It was ordained to be the token or seal of the everlasting covenant between God and his people. Such is the view of the apostle Paul, who looked upon circumcision of the foreskin as symbolical of the circumcision of the heart; and who considered that it, with all that was merely Judaistic and material, was abrogated by the more spiritual teaching of Christ.

The time for circumcision among the Jews is the eighth day after the birth of the child; among the Arabians the 13th year, in remembrance, it is said, of their ancestor Ishmael: among the Kafirs, at a still later period, marking, in fact, the transition from youth to manhood; and, indeed, each nation seems to have selected the time most agreeable to its own notions of what is prudent or becoming. The Abyssinians are the only people professing Christianity among whom circumcision is practiced. The circumcision of females, or what is equivalent to such, is not unknown among various African nations. For fuller information in regard to circumcision consult Sonnini's *Travels in Egypt*, Sir John Marsham's *Chronicus Canon Ægyptiacus*, and Winer's *Biblisches Realwörterbuch*.

CIRCUM-DENUDATION, n.: in *geol.*, applied to mountain-masses left standing up, the surrounding material being worn away

CIRCUMFERENCE, n. *sĕr-kŭm'fĕr-ĕns*, [L. *circum*, round about; *ferens*, or *feren'tem*, carrying]: the line that bounds a circle; the measure of a circular body or a sphere round and round (the measure round about of any other body is called its *perimeter*). CIRCUM'FEREN'TIAL, a. *-fĕr-ĕn'shăl*, pertaining to the circumference. CIRCUM'FEREN'TOR, n. *-fĕr-ĕn'tĕr*, an instrument used by surveyors for measuring angles.

CIRCUMFLECT, v. *sĕr'kŭm-flĕkt* [L. *circum*, round about; *flecto*, I bend]: to bend around; to mark or indicate with a circumflex. CIR'CUMFLEC'TION, n. *-flĕk'shŭn* [L. *flexus*, bent]: the act of bending around.

CIRCUMFLEX, n. *sĕr'kŭm-flĕks* [L. *circum*, round about; *flexus*, bent]; a mark or character, thus (~ or ^) over a word or syllable, combining the rising and falling (acute and grave) accent; in *anat.*, applied to certain vessels and nerves, from their course, for instance, bending round a bone: V. to mark or pronounce with the circumflex. CIR'CUMFLEXING, imp. CIR'CUMFLEXED, pp. *-flĕkst.*

CIRCUMFLUENT, a. *sĕr-kŭm'flû-ĕnt* [L. *circum*, round about; *fluens*, or *fluen'tem*, flowing]: flowing round, as water. CIRCUM'FLUENCE, n. *-flû-ĕns*, a flowing round on all sides. CIRCUM'FLUOUS, a. *-flû-ŭs*, flowing round.

CIRCUMFUSE, v. *sĕr'kŭm-fūz'* [L. *circum*, round about; *fūsus*, poured]: to spread round, as a fluid; to pour round; to surround. CIR'CUMFU'SING, imp. CIR'CUMFUSED, pp. *-fūzed.* CIRCUMFU'SION, n. *-fū'zhūn.* CIR'CUMFU'SILE, a. *-fū'zil* [L. *fūsilis*, fluid, liquid]: capable of being poured or spread around.

CIRCUMJACENT, a. *sĕr'kŭm-jā'sĕnt* [*circum*, round about; *jăcens*, or *jacen'tem*, lying]: lying round; bordering on every side.

CIRCUMLOCUTION, n. *sĕr'kŭm-lō-kū'shŭn* [L. *circum*, round about; *locūtus*, spoken—*lit.*, a speaking round about]: the use of many words to express an idea which might have been conveyed by fewer; a periphrasis. CIR'CUMLOC'UTORY, a. *-lŏk'ū-ter-ĭ*, pertaining to.

CIRCUMNAVIGATE, v. *sĕr'kŭm-năv'ĭ-gāt* [L. *circum*, round; *navĭgātus*, sailed—from *navis*, a ship]: to sail round, as the world; to pass round by water. CIR'CUMNAV'IGATING, imp. CIR'CUMNAV'IGATED, pp. CIR'CUMNAV'IGABLE, a. *-gă-bl*, that may be sailed round. CIR'CUMNAVIGA'TION, n. *-gā'shŭn*, the act of sailing round. CIR'CUMNAV'IGATOR, n. *-ter*, one who. The C. of the globe, at one time considered a great feat, is now regarded a commonplace affair in a sailor's experience. The first ship to circumnavigate the globe was that of Magalhaens (q.v.), or Magellan, a Portugese, 1519, who was killed in the Philippine Islands; eighteen years afterward it was accomplished by a Spaniard, and in 1577, by Sir Francis Drake. The most celebrated of circumnavigators, however, was Captain James Cook, who in 1768-79 made three voyages round the world.

CIRCUMNUTATION, *sėr'kŭm-nū-tā'shŭn:* phenomenon of plant growth sometimes called notation. It is curvature of stem caused by one side growing more rapidly than another, and is common in orthotropic organs and those which grow rapidly in length.

CIRCUMPOLAR, a. *sėr'kŭm-pō'lĕr* [L. *circum,* round about; *polus,* the pole]: round the pole. CIRCUMPOLAR STARS, term applied to stars so near north pole that they do not at any portion of their course dip below the horizon.

CIRCUMROTATE, v. *sėr'kŭm-rō-tāt'* [L. *circum,* round about; *rotātus,* wheeled—from *rŏtă,* a wheel]: to whirl round with a wheel-like motion. CIR'CUMROTA'TING, imp. CIR'CUMROTA'TED, pp. *-ro-tā'tĕd.* CIR'CUMROTA'TION, n. *-tā'shŭn,* the act of whirling round like a wheel. CIR'CUMRO'TATORY, a. *-tā-tėr-ĭ,* whirling round.

CIRCUMSCRIBE, v. *sėr'kŭm-skrīb'* [L. *circum,* round about; *scribo,* I write]: to draw a line round; to bound; to limit; to confine or restrict. CIR'CUMSCRI'BING, imp. CIR'CUMSCRIBED, pp. *skrībd,* limited; confined. CIR'CUMSCRI'BABLE, a. *-bă-bl.* CIR'CUMSCRIP'TION, n. *-skrĭp'shŭn* [L. *scriptus,* written]: limitation; in *bot.,* the periphery or margin of a leaf. CIR'CUMSCRIP'TIVE, a. *-tĭv,* limiting; defining external form.—SYN of 'circumscribe.' to inclose; limit; bound; restrict; include; environ; surround; restrain, encircle; encompass; confine; abridge.

CIRCUMSPECT, a. *sėr'kŭm-spĕkt* [L. *circum,* round about; *spectus,* looked; regarded]: cautious; prudent; weighing well the probable consequences of an action. CIR'CUMSPECT'LY, ad. *-lĭ,* in a watchful, careful manner; cautiously; vigilantly. CIR'CUMSPEC'TION, n. *-spĕk'shŭn,* great caution; attention. CIR'CUMSPEC'TIVE, a. *-tĭv,* vigilant; cautious. CIR'CUMSPECT'TIVELY, ad. *-lĭ.* CIR'CUMSPECT'NESS, n. caution; discreetness.—SYN. of 'circumspect': cautious; watchful; thoughtful; wary; careful prudent; discreet.

CIRCUMSTANCE, n. *sėr'kŭm-stăns* [L. *circumstan'tiă* —from *circum,* round about; *stans,* or *stantem,* standing]: that which affects a fact or case in some way; event; incident. CIR'CUMSTANCES, n. plu. *-stăn-sĭs,* condition or state of affairs; matters attending an action that modify it for better or worse; worldly means: V. to place in a particular position or condition. CIR'CUMSTANCED, pp. *-stănst,* placed in a particular position as regards another state. CIR'CUMSTAN'TIAL, a. *-stăn'shăl,* relating to but not essential; pertaining to particular incidents; incidental; casual; particular; minute; in *law,* proving indirectly. CIR'CUMSTAN'TIALLY, ad. *-shăl-lĭ,* not essentially; exactly; in every circumstance or particular. CIR'CUMSTAN'TIAL'ITY, n. *-shĭ-ăl'ĭ-tĭ.* CIR'CUMSTAN'TIALS, n. plu. *-shălz,* incidentals. CIR'CUMSTAN'TIATE, v. *-shĭ-āt,* to describe exactly; to verify in every particular. CIR'CUMSTAN'TIATING, imp. CIR'CUMSTAN'TIATED, pp. CIRCUMSTANTIAL EVIDENCE, in *law,* see EVIDENCE.—SYN. of 'circumstance': situation; incident; fact; event; occurrence.

CIRCUMSTAN'TIAL EV'IDENCE: see EVIDENCE.

CIRCUMVALLATION, n. *sėr'kŭm-văl-lā'shŭn* [L. *circum*, round about; *vallum*, an earthen wall or parapet set with palisades, a rampart]: in *fort.*, series of works by a besieging army surrounding a place; not to serve offensively against the place, but to defend the siege-army from an attack from without. It consists usually of a chain of redoubts, either isolated or connected by a line of parapet. Such lines were much used in the sieges of the ancient and middle ages; but in modern times they are not so necessary, because the use of artillery lessens the duration of a siege, and also because the besiegers have generally a corps of observation in the open field, ready to repel any force of the enemy about to succour the besieged. A remarkable example of C. was at Sebastopol, where, while a circuit of batteries fired upon the town; an outer circuit of redoubts and lines kept off the Russians who were in the open field; but the necessity for this arose out of the smallness of the besieging force compared with that of the besieged. The narrow escape of the allies from utter overthrow at Inkermann showed the necessity for this external defence. For the relation of C. to COUNTERVALLATION, see that title. CIR'CUMVAL'LATE, a. *-văl'lāt*, applied to certain papillæ on the tongue, each surrounded by a groove or trench.

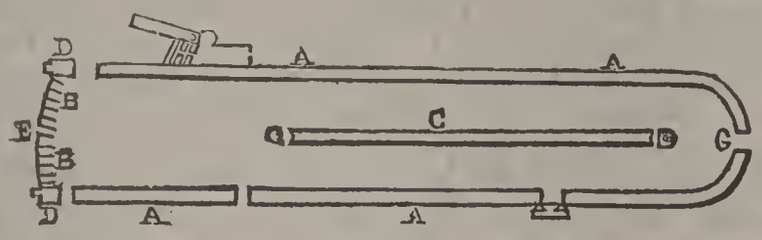
CIRCUMVENT, v. *sėr'kŭm-vĕnt'* [L. *circum*, round about; *ventus*, come—*lit.*, to come round about]: to gain advantage over another; to outwit; to cheat; to impose on. CIR'CUMVENT'ING, imp. CIR'CUMVENT'ED, pp. CIR'CUMVEN'TION, n. *-vĕn'shŭn*, the act of gaining an advantage by fraud; deception. CIR'CUMVEN'TIVE, a. *-tĭv*, deluding; deceiving by artifice: see FRAUD.

CIRCUMVOLVE, v. *sėr'kŭm-vŏlv'* [L. *circum*, round about; *volvo*, I roll]: to roll round; to move in a circle; to revolve. CIR'CUMVOLV'ING, imp. CIR'CUMVOLVED', pp. *-vŏlvd'*. CIR'CUMVOLU'TION, n. *-vŏ-lō'shŭn* [L. *volūtus*, rolled]: state of being rolled round; act of.

CIR'CUS: see HARRIER.

CIRCUS, n. *sėr'kŭs* [L. *circus*, a circular line. Gr. *kirkos*, the circle described by a hawk in its flight: It. *circo:* F. *cirque*], a circular inclosure for feats of horsemanship, etc., with seats for spectators rising all round in tiers, and sloping backward. The circus of ancient Rome was a large, oblong building, adapted for chariot-races and horse-races; used also for the exhibition of athletic exercises, mock-contests, and conflicts of wild beasts. The circensian games were alleged by tradition to have originated in the time of Romulus, when they were dedicated to Consus or Neptune, and called *Consualia*. After the first war undertaken by Tarquinius Priscus, in which he captured the Latin city of Apiolæ, his victory was celebrated by games. A space was marked out for a C., and the senators and knights were allowed to erect scaffoldings round it for themselves. The games continued to be held annually and a permanent edifice was soon constructed, distinguished, after the erection of the Flaminian and other large circi, as the circus maxi-

mus. It must have been altered and enlarged at various times. According to different computations it was capable of holding 150,000, 260,000, or 385,000 persons. Its extent also has been variously estimated. In the time of Julius Cæsar it was three stadia or 1,875 ft. long, and one stadium or 625 ft. wide, while the depth of the buildings surrounding the open space was half a stadium, or about 312 ft. All the circi in Rome, of which there were a considerable number, are now completely destroyed; but a small C. on the Appian way, about two m. from Rome, known as the circus of Caracalla, is still in a state of preservation. Its construction is believed to have differed very little from that of buildings for a like purpose. The annexed wood-cut gives some idea of the arrangement and relative dimensions of its parts.




Circus.

Along the sides and at the curved end (round the lines AA), where ascending ranges of stone seats for the spectators. At the other end, BB, were the *carceres*, or stalls, which were covered and furnished with gates, and in which the horses and chariots remained until, on a given signal, the gates were simultaneously flung open. In the centre is the *spina*, C, a long and broad wall round which the charioteers drove, terminating at both ends at the *metæ*, or goals—three cones of carved wood which marked the turnings of the course. At each extremity of the *carceres* is a stone tower, DD. From its gates and castellated appearance, the whole of this side received the name of *oppidum*, a town. Over the *carceres* were seats for the president of the games, the consuls, or other distinguished persons. There were four entrances, of which the most important were the *Porta Pompæ*, F, and the *Porta Triumphalis*, G. The games were inaugurated by a procession from the capitol, in which those bearing the images of the gods went first, followed by the performers in the games, the consuls, and others. This procession entered through the *Porta Pompæ*, while the *Porta Triumphalis* was that by which the victors left the circus.

The *spina*, an object conspicuous from its situation, was in general highly decorated by such objects as statues, small temples, altars, etc. In the *spina* of the circus maximus, two very large obelisks were erected by Augustus and Constantius. This C. was distinguished also by six towers, and by a canal or *euripus*, formed by Julius Cæsar, to protect the spectators more effectually during the conflicts of wild beasts.

The C. was adapted especially for races, of which the Romans were passionately fond. The length of a race was

seven circuits round the *spina*, and 25 races were run in each day. The number of chariots were usually four. The charioteers adopted different colors, representing the four seasons. Bets and party-spirit ran high, and the victor received a substantial pecuniary reward at the end of the race. The athletic exercises, such as boxing and wrestling, which sometimes terminated fatally, were exhibited probably in the large open space between the *carceres* and the *spina*. The *Ludus Trojæ* was a mock-conflict between young men on horseback. A regular battle was sometimes represented (*Pugna Equestris et Pedestris*). By the formation of canals and the introduction of vessels, a *Naumachia*, or sea-fight, was occasionally exhibited; but, under the empire, this species of exhibition, as well as the *Venatio*, was gradually transferred to the amphitheatre (q.v.). In providing for the *Venatio* or hunting of wild beasts, vast sums of money were expended. Animals were procured from every available part of the Roman Empire, including Africa and Asia. The exhibition not only gave opportunity for the display of private munificence or ostentation, but attained the importance of a political engine, which none who aspired to popularity ventured to overlook. When Pompey opened his new theatre, he is said to have given public exhibitions in the circus for five days, during which 500 lions and 20 elephants were destroyed.

In modern times the circus stands but as the shadow of a name. It is of about the same size as the modern theatre, and is employed principally for the exhibition of feats of horsemanship and for acrobatic displays.

CIRENCESTER, *sī′rĕn-sĕs-tėr*, or *sĭs′ė-tėr*, or CICESTER, *sĭs′ĭs-tėr:* town in Gloucestershire, on the Churn, an upper branch of the Thames, and on the Thames and Severn Canal, 71 m. s.e. of Gloucester. It has four chief streets, and the appearance of opulence, though it has little trade. An agricultural college was founded here 1846 (see AGRICULTURAL EDUCATION. Cirencester was the Roman *Corinium-Ceaster*, at the junction of five Roman roads, and has traces of ancient walls two m. in circuit. Roman relics have been found here, as coins, urns, baths. Canute held a council here 1020 to expel Ethelwolf. Rupert stormed Cirencester 1642 and '43, and it was afterward given to Essex. Pop. about 7,500.

CIRRHOSIS, n. *sĭr-rō′sĭs* [Gr. *kirrhos*, tawny]: in *med.*, a term applied to a diseased state of the liver.

CIRRI: see under CIRRUS.

CIRRIFEROUS, a. *sĭr-rĭj′ėr-ŭs* [L. *cirrus*, a curl; *fero*, I bear]: producing tendrils.

CIRRIFORM, a *sĭr′rĭ-fawrm* [L. *cirrus*, a curl; *forma*, shape]: having the form or appearance of tendrils. CIRRIGEROUS, a. *sĭr-rĭj′ėr-ŭs* [L. *gero*, I bear]: having curled locks.

CIRRIGRADE, a. *sĭr′rĭ-grād* [L. *cirrus*, a curl; *grădus*, a step]: moving by means of cirri.

CIRRIPEDA, or CIRRHOPODA (also CIRRIPED′IA) [L.

*cirrus*, a curl; *pedēs*, feet]: class of animals which formed the genus *Lepas* of Linnæus, ranked by him among the multivalve *Testacea*, and by subsequent naturalists very generally regarded as an order of mollusks, until, in consequence of recent discoveries, a place has been assigned them among the *Articulata*, either as a distinct class of that great division of the animal kingdom, or as a sub-class of *Crustacea*. Barnacles (q.v.) and *Balani*, or acorn-shells (see BALANUS), are the most familiar examples of C.; but many species are known, all exhibiting much general similarity to these, all marine, and all in their mature state permanently attached to objects of various kinds, as rocks, sea-weeds, shells, etc. Some are found imbedded in corals, others in the thick skin of whales, some in the flesh of sharks. They are distributed over the world; the species, however, are not numerous anywhere; those species which adhere to fixed bodies are in general much more limited in their geographic range than those which attach themselves to floating objects or to vertebrate animals. They are generally divided into two orders, *Pedunculated* and *Sessile*, those of the former order being supported on a flexible stalk, which is wanting in the latter. Barnacles are pedunculated C., and *Balani* are sessile.

The resemblance of C. to mollusks consists chiefly in their external appearance. In the more important parts of their organization, however, the C. resemble crustaceans rather than mollusks. The gills, when these exist, occupy the same relative position as in crustaceans; but the aëration of the blood is supposed to be affected also in the *cirri*, as the limbs or organs have been generally called, of which there are six pair on each side, and which may be described as long, tapering arms, each composed of many joints and *ciliated* or fringed with stiff hairs. The *cirri* nearest the mouth are shortest, and all of them together form a sort of net for the capture of minute animals, being incessantly thrown out by the cirriped from a lateral opening of its sac, and drawn in again in such a manner as to convey to the mouth any prey which they may have caught. Almost all the C. are hermaphrodite; but in a few genera the sexes are distinct, and these show a remarkable anomaly, the males being not only very small in comparison with the females, and more short-lived, but, in their mature state, *parasitic* on the females, or attached to them as they are to other objects, while in some the still more remarkable anomaly appears of what have been called *complemental* males, attached in this way to hermaphrodites. The eggs of C. are hatched before being finally set free from the body of the parent. The young possess the power of locomotion, swimming freely in the water, and are furnished with eyes, which disappear after they have permanently fixed themselves, by instinctive choice, in situations adapted to their kind. They have also shells, quite different from those of their mature state. The shelly coverings of the C. all are formed according to a certain type, but with many variations, and they differ extremely in the number of pieces or valves of which they consist, some as the common barnacles, having only

five valves, and others having additional small pieces arranged in whorls, and exceeding 100 in number. In most of the C. the shelly covering is very complete; in some it is almost rudimentary.

The most important discoveries concerning the structure and metamorphoses of the C., determining their place in the animal kingdom, were made by J. V. Thompson. For the most extended examination of species, and for an admirable monograph, published by the Ray society, the scientific world is indebted to Charles Darwin. CIRRIPED, or CIRRIPEDE, n. *sĭr'rĭ-pĕd;* CIR'RIPEDS, or CIR'RIPEDES, n. plu. *-pĕdz,* crustaceous animal of the class cirripeda, as the barnacles, having curled jointed feet, and shells of several valves; also spelled CIR'ROPOD, n. *-rŏpŏd.*

CIRRO, a. *sĭr'rō* [L. *cirrus,* a curl]: in composition, the 'curl-cloud,' one of the primary modifications of cloud, consisting of parallel or diverging fibres which may increase in any, or in all directions, after serene weather. CIR'RO-CU'MULUS, n. *-kū'mū-lŭs* [L. *cu'mŭlus,* a mass piled up high]: the cloud which is composed of well-defined roundish masses, completely separated by small, clear sky intervals, the appearance formed being called *mackerel sky.* CIR'RO-STRA'TUS, n. *-strā'tŭs* [L. *stratum,* the thing spread out, a bed]: horizontal or slightly inclined masses of cloud, bent down or undulated, and either separate or in groups. CIRRUS CLOUD: see CLOUDS.

CIR'RUS, or CIRRHUS [L., a curl, or lock of hair], or TENDRIL, in Botany: a leaf altered into a slender spiral, which, by twisting around such objects as it comes in contact with, attaches the plant to them, and enables it to climb, when otherwise, through the weakness of its stem, it must have been prostrate. There are many varieties of C., as it is merely an elongation of the midrib of a pinnate leaf—an altered terminal leaflet, or becomes compound by the alteration of several leaflets, or occupies altogether the place of a single or compound leaf, and is accordingly either simple or branching. Examples of different kinds may be seen in the pea, vetch, vine, passion-flower, etc. CIRROUS, a. *sĭr'rus,* or CIRROSE, a. *-rōs,* having or giving off tendrils. CIRRI, or CIRRHI, n. plu. *sĭr'rī,* curled, jointed filaments acting as feet to barnacles; in *bot.,* tendrils.

CIRTA, *sēr'ta:* now Constantine, in Algeria, Africa; ancient cap. of the Massyli. It was built by architects from Carthage, and the name meant city. The Romans considered it the strongest position in Numidia. In the second Punic war it was in alliance with Carthage. Micipsa enlarged it and settled Greek colonists there; it then maintained an army of 30,000. Adherbal was besieged and defeated by Jugurtha there. After the latter's death it was held by the Romans, who there established Colonia Sittianorum. Having fallen into decay, it was restored by Constantine, and took his name. The ruins of the ancient city are extensive. See CONSTANTINE (city).

CIS, *sĭs:* Latin preposition meaning 'on this side,' often prefixed to names of rivers and mountains to form adjec-

tives; Cisalpine, Cispadane, 'on this side of the Alps,' 'of the Po.' As most of these words are of Roman origin, Rome is considered as the point of departure.

CISALPINE, *sĭs-ăl'pĭn* [L. *cis*, on this side; *Alpes*, the Alps]: on this side of the Alps in regard to Rome; applied to that part of Gaul lying s. of the Alps. After the battle of Lodi, 1796, May, Gen. Bonaparte proceeded to organize two states—one s. of the Po, the Cispadane Republic, and one n., the Transpadane. These two, however, were in 1797 united under the title of the C. Republic, which embraced Lombardy, Mantua, Bergamo, Brescia, Cremona, Verona, and Rovigo, the duchy of Modena the principality of Massa and Carrara, and the three legations of Bologna, Ferrara, and the Romagna, having more than 16,000 sq. m.; pop. 3,500,000. Milan was the seat of the government or directory, and the place of meeting of the legislative assembly, which was composed of a senate of 80 members, and a great council of 160. The army consisted of 20,000 French troops, paid by the republic. A more intimate connection was formed 1798 between the new republic and France, by an alliance offensive and defensive, and a treaty of commerce. The republic was dissolved for a time in 1799 by the victories of the Russians and Austrians, but was restored by Bonaparte, after the victory of Marengo, with some modifications of constitution and increase of territory. In 1802 it took the name of the Italian republic, and chose Bonaparte for its president. A deputation from the republic 1805 conferred on the Emp. Napoleon the title of King of Italy, after which it formed the kingdom of Italy till 1814.

CISLEITHANIA, *sĭs-lī-thā'nē-a*, or *sĭs-lī-tā'nē-â*, or CISLEITHAN AUSTRIA, *sĭs-lī'than* or *sĭs-lī'tan:* unofficial name since 1867 of so much of the Austrian dominions as are not within the Hungarian boundary, which is formed partly by the river Leitha. Besides the German provinces, the term covers Dalmatia, Istria, Galicia, and Bukowina. C. embraces less than half the territory of the empire, and half the population or a little more.

CISPADANE REPUBLIC: see CISALPINE.

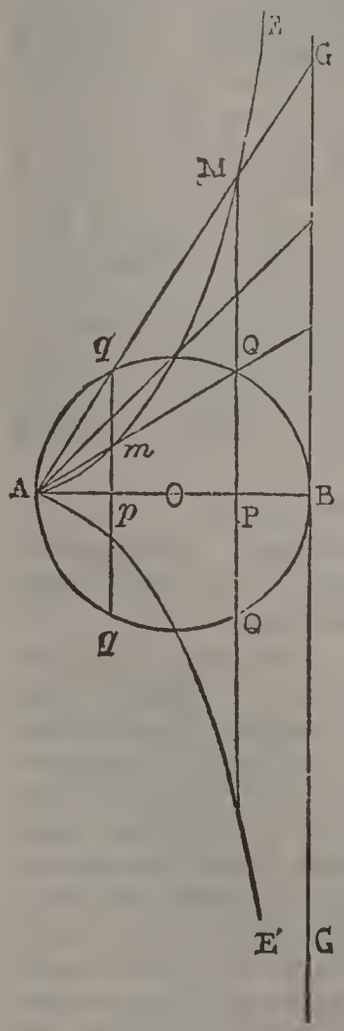
CISPLATINE REPUBLIC, *sĭs-plâ-tēn':* designation, 1829–31, of the republic of Uruguay (q.v.); previously Brazilian territory, known as the Cisplatine province.

CISSAMPELOS, *sĭs-ăm'pĕl-ŏs* [Gr., ivy-vine]: genus of plants of the nat. ord. *Menispermaceæ*, of which some species possess valuable medicinal properties, particularly *C. Pareira*, native of the W. Indies and warm parts of America, the root of which is known by the names of *Pareira Brava* and *Butua Root.* The plant is called Velvet Leaf in the W. Indies, from the peculiar and beautiful appearance of the leaves. It is a climbing shrub, with roundish-triangular leaves, racemes of small yellow flowers, and small hairy scarlet berries. The root appears in commerce in pieces two or three ft long, varying from the thickness of the finger to that of the arm, tough, but so porous that air can be blown from end to end of it. It has a sweetish, afterward nauseous taste; is used as a tonic and diuretic, appears

to exercise a specific influence over the mucous membrane of the urinary passages, and is administered with advantage in chronic inflammation of the bladder. It was formerly supposed to possess great lithontriptic powers, which it was even hoped would put an end to all necessity for lithotomy. It is supposed that the roots of other plants of the same order are often fraudulently mingled with it; but those of several species of C., both American and East Indian, appear to have nearly the same properties. An alkaloid, called *Cissampelin*, in this root, gives it its properties.

CISSEY, *sēs sā'*, Ernest Louis Octave Courtot de: 1810, Dec. 23—1882, June 16; b. Paris: general. He was educated at Saint Cyr, became aide to Gen. Trézel 1835, served in Algeria and the Crimea, and commanded the 11th div. at Rennes 1863–70. He led the 1st div. of the 4th corps at Metz, urged Bazaine to break through the German lines, and was sent on an unsuccessful mission to arrange terms of capitulation. He was elected to the assembly 1871, Feb., was prominent in rescuing Paris from the communists, and was minister of war 1871–73 and 1874–76. He was accused 1880 of disclosing secrets of the war-office, but honorably acquitted. He died in Paris.

CISSOID, or Cissoid of Diocles, n. *sĭs'soyd ŏv dī'ō-klēz* [Gr. *kissos*, ivy; *eidos*, form]: a mathematical curve invented by Diocles, the mathematician, for the purpose of solving two celebrated problems in geometry—viz., the trisection of a plane angle, and the construction of two geometrical means between two given straight lines. Let AB (see fig.) be the diameter of any given circle, and PQ, *pq*, any two ordinates at equal distances from the centre O. Then, if a straight line be drawn through A and either of the points *q*, Q, and produce it till it cuts the other ordinate, produced if necessary, the point of intersection, M, or *m*, will, in its different positions, trace out a curve called a *cissoid*. The circle AB is called the generating circle, and the diameter AB is called the axis of the curve. It is clear from the figure that the C. must consist of two infinite symmetrical branches, AE and AE', having a cusp point at A. The straight line GB tangent at B to the generating circle, is a common asymptote to these branches. Taking A as origin, and AB = $a$ and a line at right angles to it, through A, as axes of co-ordinates, the equation to the C. is $y^2 = \frac{x^3}{(a-x)}$. The curve may be constructed mechanically. The area of the space in




Cissoid.

cluded between the two branches and their asymptote is equal to three times the area of the generating circle. If, instead of a circle, any other curve be employed as the generating curve, the curve generated in the same way as the C. of D. is called *cissoidal.*

CIS'SUS: see VITACEÆ.

CIST, n., also spelled CYST, *sĭst* [L. *cista*, a basket of wicker-work: Gr. *kistē:* F. *ciste:* It. *cesta*]: a chest or box: in *archæol.*, an anc. tomb of the Celtic period, consisting of two rows of stone, and covered with rude stone slabs. CIS'TED, a. inclosed in a cist.

CISTERCIAN, n. *sĭs-tẽr'shĭ-ăn:* one of an order of reformed Benedictine monks established originally at Citeaux (Cistercium), near Dijon, France, where the parent monastery was founded 1098 by the Benedictine abbot, Robert of Molême. Through the influence chiefly of St. Bernard of Clairvaux, who became a monk of Citeaux, 1113, the order, within little more than a century after its foundation, was in possession of more than 1,800 abbeys in France, Germany, England, Ireland, Denmark, Norway, and Sweden. The C. were distinguished from the order of Clugny by their severer rule and stricter poverty, avoiding everything like splendor in their churches, even gold and silver crosses; by being submissive to the jurisdiction of the bishops, at least till after the death of St Bernard; by not meddling with the cure of souls; by wearing a white robe with a black scapulary; and by their peculiar form of government, introduced by Innocent III., 1215, into all the monastic orders. In France, the members of this order called themselves Bernardines, in honor of St. Bernard. Among the fraternities emanating from the C., the most remarkable were the Barefooted monks or Feuillans, and the nuns of Port Royal in France, the Recollets or reformed Cistercian nuns in Spain, and the Trappists. The number of Cistercian abbeys in England, in the reign of Henry VIII., was 75, besides 26 Cistercian nunneries. In Scotland, there were 11 abbeys and 7 nunneries. Among the English abbeys were Woburn, Tintern, Furness, Fountains, Kirkstall, and Rievaux; among the Scottish, Melrose, Dundrennan, Kinloss, Glenluce, Culross, Deer, Balmerino, and Sweetheart or New Abbey. The chief French abbeys, *les quatre premières filles de Citeaux*, as they were called, were La Ferté, Pontigny, Clairvaux, and Morimond. Riches and indolence brought this powerful order, like others, into decay. Even before the Reformation, many of their convents had ceased to exist. The French Revolution reduced the C. to a few convents in Spain, Poland, Austria, and Saxony. The ancient buildings of the order at Citeaux are now occupied as a juvenile reformatory. The celebrated Clos Vougeot wine was made from grapes on lands belonging to this abbey.

CISTERN, n. *sĭs'tẽrn* [OF. *cisterne*—from L. *cister'na*, a reservoir for water—from *cista*, a chest]: tank or box, oblong, square, or cylindrical, for storing water for domestic use; sometimes a natural reservoir; hollow place containing

water. Cisterns are made of wood, usually lined with lead or zinc; or of iron. For very large cisterns the cylindrical form is best fitted to sustain the pressure of water on the sides: see WATER SUPPLY.

CISTOME, n. *sĭs'tō-mē* [Gr. *kistē*, a small box or chest, or L. *cista*, a basket of wicker-work: Gr. *stoma*, a mouth]: in *bot.*, a funnel-shaped prolongation of the cuticle into the openings of the stomata.

CISTUS, *sĭs'tŭs*, or ROCK'-ROSE: genus of exogenous plants, which gives its name to the nat. ord. *Cistaceæ;* an order allied to *Cruciferæ* and *Capparideæ*, and containing about 200 known species of shrubs and herbaceous plants, natives chiefly of the s. of Europe and n. of Africa. The flowers have generally five petals, very delicate; the stamens are numerous, the style simple, the fruit a capsule. Many species of this order are more or less resinous; and from the twigs of some species of *Cistus*, natives of the s. of Europe and the Levant, particularly *C. Creticus*, *C. Cyprius*, and *C. ladaniferus*, the resinous substance called *Ladanum* is obtained which is used as a stimulant, chiefly in plasters, though obsolete in British medical practice. Many species of *Cistus* are cultivated for the beauty of their flowers, which are red, white, lilac, yellow, or frequently of two colors, and are common in gardens and greenhouses. Most of the larger kinds require some protection in the winters of temperate climates. One species, whose yellow flowers are a frequent ornament of dry hill-slopes, is *Helianthemum vulgare.*

Helianthemum Vulgare.

CIT, n. *sĭt:* familiar name for CITIZEN.

CITADEL, n. *sĭt'ă-dĕl* [F. *citadelle*—from It. *cittadella*, a little town—from L. *civĭta'tem*, a city]: a fortress or castle in or near a city; a place of arms; usually having four or five bastions. A C. serves two purposes: it enable the garrison of a town to keep the inhabitants in subjection; and, in case of a siege, it forms a place of last retreat for the defenders, and enables them to hold out after the rest of the town has been captured. A C. should fully command the fortifications of the city, and have a large space round it clear of buildings.

CITA'TION: act of calling a party into court to answer to an action, to give evidence, or to perform some other judicial act. Being derived from the civil law, the

term citation is known in England chiefly or exclusively in the ecclesiastical courts; but it is in frequent use in the legal systems of France and Scotland (see DEBTS, RECOVERY OF). See EDICTAL CITATION.

CITATION FOR INTERRUPTING PRESCRIPTION.—Either the positive or negative prescription may be interrupted by citation in an action: see PRESCRIPTION.

CITE, v. *sīt* [F. *citer*, to summon—from L. *citārĕ*, to put into quick motion, to call]: to call upon to appear in a court of justice; to summon; to quote; to repeat the words of another in proof; to confirm or illustrate from some authority. CI'TING, imp. CI'TED, pp. CITATION, n. *sī-tā'-shŭn*, a summons into court; a quotation. CI'TABLE, a. *-tă-bl*, capable of being cited. CI'TATORY, a. *-tă-tėr-ĭ*, having power or form of citation; CI'TER, n. *-tėr*, one who, CITAL, n. *sī'tăl*, in *OE.*, citation.—SYN. of 'cite': to summon; call; bid; invite; quote.

CITHÆRON, MOUNT: see ELATEA.

CITHERN, n. *sĭth' ėrn* [Ger. *cither and zitter*—from L. *cith'ără*; Gr. *kith'ără*, the cithern]: a stringed musical instrument resembling the guitar; also spelled CITTERN and GITTERN; *guitar* [Sp.] is from the same root.

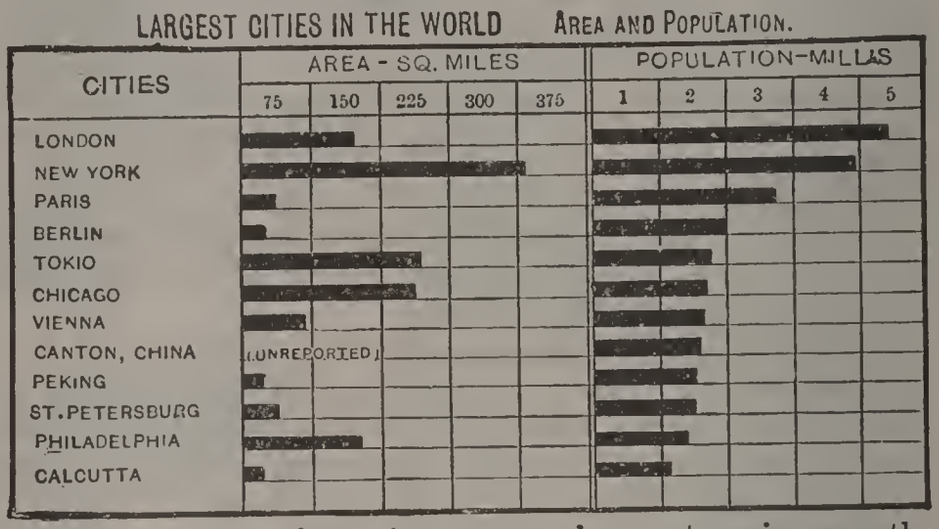
CITICISM and CITED: see under CITY.

CITIES OF THE UNITED STATES, RECENT INDUSTRIAL DEVELOPMENT OF: the aggregates dealing with the industrial development of the United States during the past few years are phenomenal in their magnitude. The official Federal and State reports, 1900–1905, indicate a great forward movement in many cities and towns contributing toward the enormous totals shown. These reports reveal, through the interesting facts and figures given, a steady, irresistible, impelling financial and commercial energy and enterprise little short of marvellous.

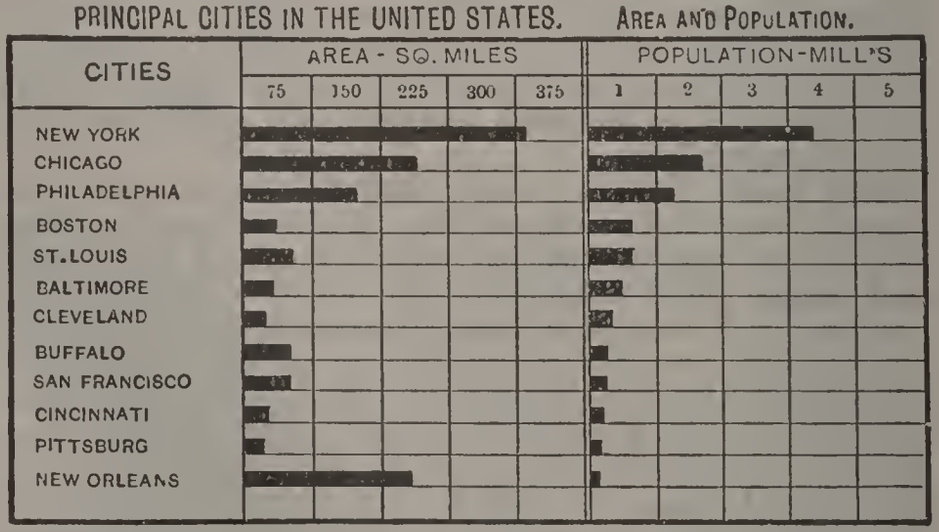
The latest Federal Census bulletin on manufactures gives a list of 544 municipalities in which manufacturing is being actively carried on. The records of these cities and towns, 1900–1905, show, in nearly every instance, a substantial increase in several departments of activity.

*Examples of the Forward Movement.*—During the period 1900–1905 Allentown, Pa., developed industrially from 216 manufacturing establishments to 259; Altoona, Pa., 57 to 73; Appleton, Wis., 88 to 108; Atchison, Kan., 39 to 61; Atlanta, Ga., 196 to 294; Battle Creek, Mich., 75 to 120; Binghamton, N. Y., 219 to 241; Bridgeport, Conn., 286 to 306; Brockton, Mass., 186 to 201; Buffalo, N. Y., 1478 to 1538; Cambridge, Mass., 243 to 262; Cedar Rapids, Iowa, 89 to 134; and so on throughout the entire list. Among the most notable instances of progress in manufactures are: Chicago, 7,688 to 8,159 establishments; Cleveland, O., 1,349 to 1,617; Columbus, O., 408 to 460; Dallas, Tex., 177 to 247; Detroit, Mich., 1,259 to 1,363; Forth Worth, Tex., 68 to 102; Hoboken, N. J., 194 to 279; Houston, Tex., 145 to 209; Indianapolis, Ind., 697 to 810;

Milwaukee, Wis., 1,419 to 1,532; Minneapolis, Minn., 789 to 877; New Haven, Conn., 437 to 490; New York, N. Y., 19,243 to 20,839; Oakland, Cal.,195 to 250; Pittsburg, Pa., 928 to 1,177; Sacramento, Cal., 111 to 157; San Francisco, Cal., 1,749 to 2,251; Seattle, Wash., 352 to 467; Tacoma, Wash., 174 to 237; Terre, Haute, Ind., 143 to 188; Toledo, O., 445 to 599; and Trenton, N. J., 246 to 312. The figures given indicate a remarkable




advance, illustrative of ever-growing enterprise on the part of capital in American industrial undertakings. In the case, for example, of Pittsburg, the official record shows that the aggregate capital invested in local industries rose in five years from $160,000,000 to $202,000,000. At Seattle, the increase in capital was nearly $16,000,000; at Trenton, $17,000,000.




*Development in Twelve Largest Cities of U. S.*—From the accompanying chart the relative size and population of each of these cities can readily be seen. Their industrial development is shown under several important headings in the following paragraphs:

*New York City:* Increase in capital invested, $190,000,000; increase in number of clerks and officials, 20,000; increase in salaries of clerks, etc., $21,000,000; increase in number of workmen, 70,000; increase in workmen's

wages, $51,000,000; increased aggregate cost of material used, $184,000,000; increased aggregate value of products, $353,000,000.

*Chicago:* Increased capital, $126,000,000; increase in number of clerks and officials, 8,000; in salaries of clerks and officials, $13,000,000; in number of workmen, 20,000; in wages of workmen, $28,000,000; in cost of material, $87,000,000; in value of products, $157,000,000.

*Philadelphia:* Increased capital, $75,000,000; increase in number of clerks and officials, 5,000; in salaries of clerks and officials, $6,000,000; in number of workmen, 14,000; in wages of workmen, $13,000,000; in cost of material $38,000,000; in value of products, $71,000,000.

*Boston:* Increased capital, $1,400,000; increase in number of clerks and officials, 1,800; in salaries of clerks and officials, $2,000,000; in number of workmen, 8,000; in wages of workmen, $3,500,000; in cost of material, $12,000,000; value of products, $21,000,000.

*St. Louis:* Increased capital, $115,000,000; increase in number of clerks and officials, 2,800; in salaries of clerks and officials, $3,400,000; in number of workmen, 18,000; in wages of workmen, $13,000,000; in cost of material, $36,000,000; in value of products, $74,000,000.

*Baltimore:* Increased capital, $41,000,000; increase in number of clerks and officials, 1,300; in salaries of clerks and officials, $1,200,000; in wages of workmen, $2,000,000; in cost of material, $5,200,000; in value of products, $16,000,000.

*Cleveland:* Increased capital, $63,000,000; increase in number of clerks and officials, 1,800; in salaries of clerks and officials, $3,000,000; in number of workmen, 12,000; in wages of workmen, $9,000,000; in cost of material, $31,000,000; in value of products, $46,000,000.

*Buffalo:* Increased capital, $41,000,000; increase in number of clerks and officials, 1,700; in salaries of clerks and officials, $2,000,000; in number of workmen, 9,000; in wages of workmen, $6,000,000; in cost of material, $22,000,000; in value of products, $42,000,000.

*San Francisco:* Increased capital, $33,000,000; increase in number of clerks and officials, 1,700; in salaries of clerks and officials, $2,700,000; in number of workmen, 6,000; in wages of workmen, $7,000 000; in cost of material, $10,000,000; in value of products, $30,000,000.

*Pittsburg:* Increased capital, $42,000 000; increase in number of clerks and officials, 2,000; in salaries of clerks and officials, $3,000,000; in number of workmen, 3,700; in wages of workmen, $3,500,000; in cost of material, $300,000; in value of products, $400,000.

*New Orleans:* Increased capital, $15,000,000; increase in number of clerks and officials, 800; in salaries of clerks and officials, $800,000; in number of workmen, 1,500; in wages of workmen, $1,300,000; in cost of material, $21,500,000; in value of products, $27,000,000.

*Exports and Imports.*—The immense volume of export business done in 1906 in or through some of the above

cities may be noted from the following official record of export and import values:

| | Total Exports. | Total Imports. |
|---|---|---|
| New York City | $607,000,000 | $734,000,000 |
| Philadelphia | 83,000,000 | 71,000,000 |
| Boston and other Mass. ports | 99,000,000 | 106,000,000 |
| San Francisco | 40,000,000 | 44,000,000 |
| New Orleans | 150,000,000 | 39,000,000 |

The volume of vehicular traffic to and from wharves to secure the shipment of exports and the unloading and transportation of imports is shown in the following partial exhibit for New York City. These goods for export, as well as other shipments, left the city wharves during 1906:

| | |
|---|---|
| 281,000,000 pounds of raw cotton | 45,000,000 pounds of tallow |
| 24,500,000 bushels of corn | 329,000,000 pounds of lard |
| 3,000,000 barrels of wheat flour | 211,000,000 pounds of bacon |
| 30,000,000 pounds of domestic merchandise and dairy produce | 50,000 000 pounds of ham |
| | 20,000,000 pounds of butter |
| 144,000,000 pounds of fresh beef | 489,000,000 gallons of illuminating oil |
| 35,000,000 pounds of salt pork | |
| 10,000,000 head of cattle | 122,000,000 pounds of leaf tobacco |

*Principal Manufacturing Industries* (in order of business volume under each heading):

*Carpets:* Philadelphia, Lowell, Hartford, New York City, Yonkers. More carpets are made in Philadelphia than in all the rest of the country combined.

*Fur Hats:* Danbury, Conn., Newark, N. J., Philadelphia, Pa., Orange, N. J., New York City, Norwalk, Conn., Reading, Pa., Bethel, Conn. Danbury makes 18 per cent. and Newark 12 per cent. of the entire United States product. The hat industry at Bethel equals 80 per cent. of that city's industrial products.

*Cotton Goods:* Fall River, Lowell, New Bedford, Philadelphia, Manchester, N. H., Lawrence, Mass., Pawtucket, R. I., Lewiston, Me., Taunton, Mass., Warwick, R. I., Holyoke, Mass., Augusta, Ga. The Fall River cotton-goods product equals 68 per cent. of that city's industries; New Bedford, 65 per cent.; Lewiston, 54 per cent. and Warwick, 71 per cent.

*Hosiery and Knit Goods:* Philadelphia (hosiery); Cohoes, N. Y., (knit goods and underwear); Amsterdam, N. Y.

*Silk Manufactures:* Paterson, N. J., New York City, Philadelphia, West Hoboken, Scranton, Pa., Allentown, Pa., and Jersey City, N. J. The manufacture of silk products in the United States was begun at Paterson.

*Manufactures of Iron and Steel:* Pittsburg, McKeesport, Chicago, Youngstown, O., Cleveland, O., Johnstown, Pa., New Castle, Pa., Joliet, Ill., Trenton, N. J., and Scranton, Pa. 15 per cent. of the United States product in iron and steel manufactures is the combined yield of Pittsburg and McKeesport annually; the McKeesport product equals 92 per cent. of that city's industrial output. More than 81 per cent. of Youngstown's industrial business, and more than 79 per cent. of Johnstown's business is in iron and steel manufactures.

*Lumber and Lumber Products:* (Spruce) Boston, Albany, New York City; (white Pine) Detroit, Chicago, Minneapo-

lis; (Spruce and Cedar) Portland, Ore., Seattle, Tacoma; (Yellow Pine) New Orleans; (Redwood) Eureka, Cal.

*Furniture:* New York City, Chicago, Grand Rapids.

*Agricultural Implements:* Chicago, Springfield, O., Racine, Wis., Auburn, N. Y., South Bend, Ind., Peoria, Ill., Dayton, O., Milwaukee, Wis.

*Flouring and Grist Mill Products:* Minneapolis, Minn. and Superior, Wis. Minneapolis is the largest milling centre in the world.

*Tanned, Curried and Finished Leather:* Philadelphia, Newark, N. J., Milwaukee, Wilmington, Del., Chicago. Philadelphia produces 9 per cent. of the total United States output.

*Boots and Shoes:* Brockton, Lynn and Haverhill, Mass. New York City, Cincinnati, St. Louis, Rochester, Philadelphia, Chicago, Manchester, N. H., Boston, Columbus, O., Salem and North Adams, Mass.

*Leather Gloves and Mittens:* Gloversville, N. Y., Johnstown, N. Y., and Chicago. Glove-making at Gloversville began in 1760.

*Glass:* Pittsburg, Muncie, Ind., Millville, N. J., Marion, Ind., and Philadelphia.

*Pottery:* Trenton, N. J., East Liverpool, O., Pittsburg, St. Louis, Zanesville, O., and New York City. Trenton and East Liverpool manufacture 20 per cent. of the entire United States product.

*Slaughtering and Meat Packing:* Chicago, Kansas City, South Omaha, St. Joseph, Mo., Indianapolis, St. Louis, Buffalo, Cincinnati, Cleveland, Milwaukee, Baltimore, Philadelphia, and New York City.

CIT'IZEN [see CITY]: defined by Aristotle as one to whom belongs the right of taking part in the deliberative or legislative, and in the judicial proceedings of the community of which he is a member (*Politics*, iii. 1). Such citizenship can exist only in a free state. Between a citizen in this sense and a subject there is this distinction that while the latter merely is governed, the former, being governed, also governs; and thus, though every Citizen is a subject, many subjects are not citizens. In this sense, which was attached to the term by the Romans, when used in its highest meaning—that, viz., of the *civis optimo jure*—the term has passed to the modern world, gradually tending toward this application everywhere—at least tending to include increasing numbers under the term as thus applied. In the heroic ages of Greece the idea of citizenship was imperfectly understood. The members of the council and assembly were mere advisers of the kings, who, as descended from gods, were regarded as monarchs in the strict sense. But something of the citizen character even then attached to the immediate followers of the chief, as contrasted with slaves and strangers, and it was from them that the dominant class sprang, which everywhere overthrew the monarchies, and established the small self-governing states—the democracies, or rather aristocracies, of Greece. At first the rights of citizenship in Athens and

other Greek communities were readily attained by those not born to them; but at a later period, when the organization of Greek civic life had reached high completeness, admission to the roll of citizens was procured with great difficulty. In Sparta, indeed, according to Herodotus, so sparing were they of their national privileges, that there were only two instances of their conferring them in their full measure on strangers. The Periœci, or strangers by origin, who shared the Spartan territory, though not on equal terms with the Spartans, were probably, as regarded political rights, much in the same position with the Roman plebeians. In Rome, there were perfect and less perfect citizens, whose respective positions are thus described by Savigny in his *History of the Roman Law in the Middle Ages:* 'In the free republic there were two classes of Roman citizens—one that had, and another that had not, a share in the sovereign power. That which peculiarly distinguished the higher class, was the right to vote in a tribe, and the capacity of enjoying magistracy.' All the private rights of citizenship (the *jus connubii* and *jus commercii*) belonged to the citizens of the lower class, but the public rights of voting in a tribe, and of receiving the honors of the magistracy (*suffragium et honores*), were denied them. Under these two classes, again, there were two others—the Latini and the Peregrini.

Roman citizenship was acquired most commonly by birth, but for this it was requisite that both father and mother should be citizens. If a citizen married a Latina, or a Peregrina, even believing her to be a citizen, the children begotten of the marriage followed the status of the mother. But latterly it was permitted, by a decree of the senate, to the parents to prove their mistake, and thus to raise both the mother and her children to the rank of citizens. In earlier times, the citizenship could be conferred on a stranger only by means of a *lex*—i.e., by a vote of the people assembled either in one or other of the Comitia (q.v.). It was conferred at a single sweep on the whole of the Latini and Socii. In the case of some of the provinces, both in Italy and Gaul, the *Latinitas* was given as a step to the *Civitas*, the former being converted into the latter in the case of any one who had exercised a Magistracy in his own state or city.

When the imperial power was established, the public rights which formed the chief characteristic of the full Roman citizenship became little more than empty names; and the only value which thenceforth attached to it consisted in the private rights which it conferred. Such as it was, the constitution of Caracalla extended it to the whole Roman world, the distinctions between Cives and Peregrini and Latini being preserved only in the case of certain individuals, such as freedmen and their children. Even this distinction was abolished by the legislation of Justinian, the only divisions of persons henceforth being into subjects and slaves. For a fuller account of this interesting subject see Smith's *Dictionary of Greek and Roman Antiquities*

In its modern use, the term citizen is applied in Great Britain to a dweller in a town, and this either in the general sense of an inhabitant, or in the narrower and stricter sense of one who has right to its privileges and franchises. In France, it denotes any one who is born in the country, or naturalized in it. In the United States it denotes any person who has legal right to vote for public offices, and to be elected to public office; and it further extends to any person, native or naturalized of either sex or any age, who is entitled to full protection in the exercise of private rights—this last application of the term (analogous to that of *subject* in England) including women and children, who though not voters are counted by the law as citizens. Persons born of American parents during foreign travel, or persons residing abroad in the United States diplomatic or consular service—also the children of such—are citizens of the United States. See NATURALIZATION. So long as slavery was an institution, slaves were not included in the title; and Indians, as such are not now included.

CITRIC, a. *sĭt′rĭk* [L. *citrus*, a lemon, or the tree]: belonging to lemons or limes; from the lemon, the produce of *Cĭtrus līmōnum*. CITRIC ACID, an acid extracted from the juice of lemons or limes. CIT′RINE, a. *-rĭn*, like a citron; lemon-colored or yellow green. CIT′RON, n. *-rŏn* [F. *citron* —from mid. L. *citrōnem*—from L. *citrus*]: the fruit of the citron-tree; the *Citrus medĭca*, ord. *Aurantĭācĕæ*. CITRATE, n. *sĭt′rāt*, a salt of citric acid.

CIT′RIC AC′ID ($HO_2CCH_2C$ (OH) ($CO_2H$) $CH_2CO_2H$): a tri-basic acid, which crystallizes in large transparent, trimetric, colorless prisms. These crystals are readily soluble in water and alcohol, but insoluble in ether. The crystals contain 1 molecule of water of crystallization (not expressed in the above formulæ), which are expelled at a temperature of 100° C. Citric acid has a strongly acid taste and reaction; its aqueous solution, when mixed with chalk and yeast, is converted into acetic and butyric acids. Citric acid melts at 147° C. and may be made artificially from dichloracetone, $ClCH_2COCH_2$, and potassium cyanide. It is found in lemons, oranges, cranberries, cowberries and sundew. It accompanies malic acid in red currants, gooseberries, whortleberries, raspberries and cloudberries, and, with malic and tartaric acids, in tamarinds and mountain-ash berries. Combined with calcium or potassium it is found in tobacco and in lettuce juice. The acid has also been detected in certain kinds of leaves and in beet root. Citric acid is manufactured from the juice of the lemon, bergamot and lime, the first being the principal source. The concentrated juice is treated with finely divided chalk, the calcium citrate separated, washed with water, and then decomposed with sulphuric acid. Gypsum is precipitated, and the citric acid crystallizes from the clear liquid when it is concentrated. Citric acid is often adulterated with tartaric acid. The two acids can be distinguished by neutralizing their aqueous solu-

tion with ammonia, and adding concentrated solution of calcium chloride. Tartaric acid is immediately thrown down as calcium tartrate, but calcium citrate is only precipitated when the liquid is boiled because it is *less* soluble in hot than in cold water. Citric acid is chiefly used in calico-printing, in photography, in the manufacture of certain effervescing drinks, and in medicine.

CIT'RON (*Citrus medica*): tree cultivated in the s. of Europe, and other warm, temperate, or sub-tropical countries for its fruit; native of the forests of the n. of India: see CITRUS. By many botanists it is regarded as a mere variety (or perhaps the original type) of the species which produces also the lemon, sweet lemon, lime, and sweet lime; by others, these, or some of them, are regarded as distinct species. The C. has oblong toothed leaves; the flowers are externally of violet color; the fruit is large, warted, and furrowed; the rind very thick and tender; the pulp sub-acid. The pulp is refrigerant; but the part chiefly valued is the rind, which has a delicious odor and flavor, and is made into a very agreeable preserve. The juice is sometimes employed to make a syrup, or, with sugar and water, for a beverage, and for flavoring liquors. The rind and juice may be said generally to be applicable to the same purposes as those of the lemon, but the juice is less acid. The CEDRATE is a variety of the citron from which chiefly the fragrant Oil of Citron, or OIL OF CEDRATE, used by perfumers, is procured. In Germany, the name Cedrate is extended to all kinds of Citron, and the name citron is usually given to the lemon. The varieties of citron are numerous. The fruit of the largest kinds is sometimes 9 inches long, and 20 lbs. in weight. The citron is successfully cultivated in temperate climates by the aid of artificial heat and the protection of glass.

It is probable that the citron is meant in some passages of the Old Testament where the word apple is used in the English version.

CITRONELLA, *sī-tro-nĕl'la:* a term of various meanings. 1. An oil used by perfumers, imported from Ceylon, and produced from the grass *Andropogon Schœnanthus.*—2. A perfume prepared from *Melissa officinalis* or common balm.—3. A liquid made in Barbadoes from citron rind, and used in France to flavor brandy.—4. Southernwood, *Artemisia Abrotanum.*

CITROS'MA: genus of trees of the nat. ord. *Monimiaceæ,* of which the leaves abound in an oil resembling, if not identical with, oil of citron; natives of tropical S. America.

CITRUS, *sĭt'rŭs:* genus of plants of the nat. ord. *Aurantiaceæ,* consisting of trees and shrubs, natives of India and other warm parts of Asia, but many of which are now commonly cultivated in all warm climates for their fruit. To this genus belong the ORANGE: CITRON: LEMON: LIME: BERGAMOT: SHADDOCK: POMPELMOOSE: FORBIDDEN FRUIT: etc. (See these titles.) It is distinguished by numerous stamens, irregularly united in bundles by their filaments,

a pulpy fruit with a spongy rind, and smooth seeds. The leaves and the rind of the fruit abound in volatile oil. The flowers also contain volatile oil, and exhale a peculiar fragrance.

CITTA VEC'CHIA: see MALTA

CITY, n. *sĭt'ĭ* [F. *cité*—from mid. L. *cĭtātem*—from L. *civitās:* It. *citta*]: a corporate town; and in England in fact, though not necessarily, a cathedral town: ADJ. pertaining to a city. CIT'IZEN, n. *-zĕn* [OF. *citeain*, a citizen —from OF. *cite;* F. *cité*, a city]: the native of a city; one who enjoys the rights and privileges pertaining to a city. CIT'IZENSHIP, n. the state of being vested with the rights and privileges of a citizen. CITIED, a. *sĭt'ĭd*, pertaining to a city; having the quality of a city; containing cities.

CIT'Y: in the United States a chartered municipal corporation, having for its chief executive a mayor, and usually governed also by a board of aldermen and a common council; and having its clerk and its seal. The legislatures in the different states grant charters to cities under varying conditions: usually a certain population is one of the requisites.

In the sense in which it was first used in the Romanic languages of modern Europe, the word C., like its Latin original, was probably equivalent to state (q.v.) (*respublica*) rather than to town or borough (*urbs, municipium*); and while the latter signified a collection of hearths and households, governed by municipal laws internally, but subject externally to the laws of the country of which they formed a part, the former was applied only to such towns as, with their surrounding district, were independent of any external authority whatever. Nearly the only cities in this sense now are the free towns of Germany, and such of the cantons of Switzerland as consist chiefly of a town and its surroundings, for example, Geneva. But as the ancient Gauls, though composing one nation, were divided into tribes, living in different cantons, each with its town, to which the term *civitas* was applied, and as they also acknowledged a species of central authority, several cities sending delegates to a central one of greater extent and importance to discuss their common affairs, there is reason to believe that the term C. was applied *par excellence* to these central places of meeting, and that it thus, from a very early period, signified a *capital* or *metropolis,* though not independent. In England, the term often is said to be confined to towns or boroughs which are or have been the seats of bishops' sees, but this restriction rests on no sufficient ground.

In the case of towns which have grown greatly beyond their original dimensions, it is not unusual to give the name of C. to the limited space which they originally occupied—thus, we speak of the C. of London, the C. of Paris, of Vienna, etc.—small parts of the present areas covered by the great towns usually known by those names.

## CITY GOVERNMENT.

CITY GOVERNMENT: a city is an incorporated municipality, having a local government usually deriving its powers and authority from a national or state government. The officials of a city may be elected or appointed, but in the United States most of the important city offices are filled by election, and city elections take place at intervals of 1 or 2 years, occasionally at longer intervals. Each state legislature makes laws for governing cities, and grants charters for incorporating cities. In some states a population of 10,000 is required before a city can be incorporated as such; in others a vote of the inhabitants of the town or territory that it is proposed to place under city government is sufficient to secure a charter of incorporation. The varying laws of the states produce differences in the government of cities, not only in the different states but in the same state. The New York legislature, in the 10 years prior to 1890, passed 1,284 acts affecting the government of cities, nearly half of them aimed to affect the cities now included in the incorporation of New York city. It is common for state legislatures to pass acts concerning cities of a certain population or greater, and thus divide the cities into classes, those of the largest population falling under laws that do not apply to smaller cities. In this way state legislatures have interfered in the government of cities, often for political reasons, creating complications and conditions sometimes of questionable benefit to citizens.

There is so much difference in the details of government of individual cities that it is impossible to describe the features of city government as if they belonged in common to all cities. A few general features, however, can be outlined. The chief official of a city is called the mayor, and his duties are essentially those of a governor or president, having general supervision over all the affairs of the city, and more or less appointing power to minor offices, or to fill vacancies. A legislative body, called a city council or board of aldermen, is usual, and some cities have two chambers or boards, the smaller body with the higher powers being styled the aldermen, and the larger body with lower powers the council. Ordinances to become effective must be passed by both bodies, just as bills must pass both the house of representatives and congress to become laws. The mayor usually has a veto power over such ordinances, similar to the veto power of the president of the United States. Sometimes the mayor is the acting president of the aldermen or council, and sometimes presiding officers are chosen for those bodies from among their membership.

As an illustration of a common form of government in American cities, Elizabeth, N. J., may be cited. It has a mayor and a council of 24, 2 from each city ward. The council holds 2 meetings a month, and discusses city affairs, appropriating funds for the various branches of city work. The scope of its operations may be under-

stood from a list of the standing committees, which are finance, law, streets and parks, sewers and drainage, printing, public buildings, health, charities, police, street lighting, fire and hydrants, railroads, and shows and exhibitions. The list of other officials of the city affords further information as to the matters over which the city government exercises some control: city clerk, comptroller, treasurer, attorney, surveyor, street commissioner, chief of police, police justice, president and secretary fire commissioners, fire department chief, overseer of poor, keeper of almshouse, president board of excise, license inspector, sealer of weights and measures, clerk of city market, health officer, city physician, sinking fund commissioners, and assessment fund commissioners.

As a rule city governments in the United States maintain a police or justice's court for the trial of small offenses and violation of city ordinances. They concern themselves largely with the care of the streets, parks, and public buildings; maintenance of order; supporting public schools; watching over health and sanitation; inspecting milk and other food supplies; licensing or prohibiting liquor selling, gambling, and public performances; providing sewerage, water supply, and lighting; levying and collecting taxes, and providing sinking funds to pay public debts contracted.

The average annual tax levied in the larger cities of the United States is about $1.50 per $1,000 on the actual value of realty and other property. Most of it falls on real estate, and it is customary to assess this at a rate below the actual value, so that the assessed valuations of cities are not a correct guide to actual valuations. Considered from the per capita point of view, the cost of city government varies in the United States from about $30 in New York and Boston, to about $6.50 in Nashville and Seattle. An average figure is about $12 per individual per year. New York city collects the largest tax, the budget for 1907 being about $130,000,000.

The government of New York city was reorganized under a new charter in 1898, when the outlying suburbs were made a part of the municipality. It has a mayor, 5 borough presidents, a board of 73 aldermen, a department of finance, headed by a comptroller; a board of estimate and apportionment, composed of the mayor, comptroller, president of the aldermen and borough presidents; these constituting the most important part of the city government. For managing the various branches of city work, there are the following departments: police, health, law, fire, parks, taxes and assessments, charities, correction, docks and ferries, and education; also the following commissions and bureaus: sinking fund, buildings, jurors, accounts, civil service, water supply, rapid transit, and aqueduct. There is also a city chamberlain, a board of assessors, and coroners, the last being named for each of the boroughs.

## CITY GOVERNMENT.

The officials of New York city receive the highest salaries of any in the country; the mayor, corporation council, and comptroller being paid $15,000 each, and the city chamberlain $12,500, while the borough presidents and the heads of the more important departments receive $7,500 each. The city judge and the judges of general sessions receive $12,000 each. The city has a force of employees numbering 48,000 in 1906, and the departments occupy numerous public buildings and rented offices. The chief individual powers are with the the mayor, comptroller, and corporation counsel. The various departments and bureaus are little restricted in the management of their affairs, being subject, however, to the courts, and to having their bills held up by the comptroller. The mayor has a removal power over the heads of many departments, and the governor of the state has removal power over the mayor.

Since New York city includes three counties, there are also county officials, as clerks, sheriffs, registers, and commissioners of records, who have charge over county jails, county records of real estate transactions, etc.

A few United States cities have adopted what is called 'government by commission,' under charters that place most of the powers with a board of commissioners, sometimes called a board of public works. The mayor usually acts with the board *ex officio*. This system was adopted by Galveston, Texas, in 1901, by Nashville, Tenn., in 1903, and by Norfolk, Va., in 1906. It has been eminently successful in Galveston, the new government paying off much accumulated debt, and making many permanent improvements. Under the old councilmanic form of government the administration of Galveston's affairs was scandalous. The city's money was wasted, and the treasury depleted, so that it issued scrip in payment of its bills, this scrip being subject to a large discount for cash. The mayor-president and the new commission chosen in 1901 have established an honest and businesslike government, that has attracted the attention of many cities, some of whom have sent representatives to Galveston to study its operation.

As adopted by Nashville, the board of public works constitutes the real active government in charge, and the city council serves as a check on the board, which may remove members of the latter for cause, by a three-fourths vote, and which also passes upon all expenditures of $500 or more by the board. The 3 members of the board of public works receive each the same amount of salary as the mayor, and give all their time to city affairs. They appoint the chiefs of the several departments, hire most of the minor officials and employees, and determine their pay. They hold office for 6 years, 1 member being elected every 2 years. The long terms are given to secure continuity of plan in operating the public utilities of the city.

## CITY GOVERNMENT.

In each of the cities where the 'commission' plan of government has been adopted, it is sought to maintain honest and capable management of the municipal affairs by placing nearly all the power in the hands of a board of 3 or 4 or 5 members, chosen as business men not as politicians, and men of character are invited and encouraged to accept position on the board. By concentrating the power in the hands of a few men, they become personally responsible to the voters for good government, and cannot shift the responsibility for their acts, as is possible with a larger body of councilmen.

Exactly opposite in character is the plan of government instituted in Newport, R. I., in 1906, being based on the town meet-idea, so successful in New England town government. A council of 195 members is the governing body, the members being named wholly by non-partisan nomination papers, and the large number being deemed a guarantee against corruption.

In foreign countries the government of cities is not so often placed in the hands of boards of salaried officials as is the case in the United States. In many cities the councils have large memberships, London having over 100 and Buda Pest about 400 members. In England and Germany the cities are usually divided into wards, and each ward has representatives in the council.

London is governed mainly as a county rather than a city. The city of London proper constituting only a small portion of the real city. The county council, whose powers were greatly enlarged by Parliament in 1888, is the moving force in the development and progress of the municipality. It has made numerous public improvements, and moves actively in straightening streets, establishing parks and pleasure grounds, and even owns and controls places of amusement.

In the cities of Prussia, Austria, and Japan, the voters are divided into classes, according to their property holdings. The first class may contain only one-fortieth of the voters, and the second class one-fourth, but each class must hold as much property as each of the other classes. This puts the voting largely on the basis of property, yet it does not deprive the poorer class of representation as a class.

Nearly every city in the United States has a public debt, and these are now usually limited by law to a fraction of the assessed value of the taxable property, often 6 per cent. Some cities have acquired abnormal debts. Cincinnati and Jersey City each have debts equal to about 15 per cent. of the property valuation, while Columbus, Ohio, and New Orleans are burdened with about 11 per cent. New York city's funded debt is 7 per cent. of the valuation. Because of a tendency to increase debt and to give away valuable franchises, there has been a general restriction of the powers of city governments.

## CITY GOVERNMENT.

In many United States cities some minor public officials and many employees are chosen under civil service rules, the object being to secure efficient service and keep good men employed, at the same time doing away with political influence in making appointments, and preventing the removal of efficient workers to make room for party followers.

The League of American Municipalities has exercised a beneficial influence on city governments. It aims at the general improvement and facilitation of every branch of municipal administration, by the following means: '(1) The perpetuation of the organization as an agency for the cooperation of American cities in the practical study of all questions pertaining to municipal administration; (2) the holding of annual conventions for the discussion of contemporaneous municipal affairs; (3) the establishment and maintenance of a municipal bureau of information, for the collection, compilation and dissemination of statistics, reports and all kinds of information relative to municipal government.'

There are also several journals printed in the United States in the interests of municipal government, these dealing with the practical administration of city affairs, and giving information as to the methods of handling business in different cities, and exchanging ideas regarding the problems that confront city governments.

CITY OF REFUGE: six cities set apart by the Jewish law (Num. xxxv., Deut. iv., Josh. xx.), three on each side of Jordan, as places of refuge for the manslayer, in which he might find an asylum, and be safe from the avenger of blood: see BLOOD, AVENGER OF. These cities were Hebron, Shechem, and Kadesh-Naphtali on the w. of Jordan; Bezer, Ramoth-Gilead, and Galan, on the e. The Jews were careful to keep the roads to the cities of refuge clear, and signs were set up to show the way. The manslayer—not being a wilful murderer—was received and protected in the C. of R. until the death of the high-priest, after which the avenger of blood had no longer any claim against him. Thus this peculiar institution was connected with the typical institutions of the Jewish religion, and partook somewhat of their character, while it modified and restrained the avenging of blood. The C. of R. afforded no permanent protection to the murderer, who, if his crime could be proved against him, was to be taken from it that he might be put to death.

CIUDAD, *thē-ô-thâth* [from the Lat. *civitas*]: Spanish word for 'a city;' used as a prefix corresponding to the English affix *town*.

CIUDAD BOLIVAR: see ANGOSTURA.

CIUDADELA, *sē-ô-dâ-dā'lâ:* seaport town of the island of Minorca, on a plain of the w. coast; lat. 39° 58′n., long. 3° 52′ e. It is walled, and has a cathedral, also several convents. The inhabitants are engaged in agriculture and the manufacture of woolen fabrics. A considerable trade is carried on at the port. Pop. about 10,000.

CIUDAD REAL, *thē-ô-thath rā-âl':* province of Spain,

containing most of old La Mancha and part of New Castile; 7,837 sq. m. It is traversed by the Guadiana, and, except in the neighborhood of this river and its branches, is mainly barren. The mountains yield iron, silver, copper, lead, antimony, cinnabar, coal, marble, and other minerals; mineral springs abound, and the noted quicksilver mine of Almaden is in the s.w. corner. Wheat, rye, barley, maize, hemp, flax, aniseed, etc., are produced; also the domestic animals. Woolen, cotton, linen, and silk goods are exported, with oil, wine, brandy, and saltpetre. The chief towns are C. R. the capital, Manzanares, Almodavar, Calatrava, and Valdepeñas. Pop. (1900) 321,580.

CIUDAD REAL: town of Spain, cap. of the province of C. R.; on a plain between the rivers Guadiana and Jabalon, abt. 100 m. s. of Madrid. It is surrounded with walls in parts ruinous, and has some handsome houses; but, on the whole, it is a poor, dull place. It has two or three fine churches—the nave of the parish church being one of the finest Gothic specimens of the kind in Spain,—and several monasteries. There are manufactures to a small extent of coarse woolens, linen, and table cloths, and a trade in the agricultural produce of the district. Pop. 15,300.

CIUDAD REAL (town in Chiapas, Mexico): see SAN CHRISTOBAL.

CIUDAD RODRIGO, *thē-ô-thâth' rŏth-rē'gō* (Roderic's Town): fortified town of Spain, province of Salamanca, abt. 50 m. s.w. of the city of Salamanca. It is on an elevation above the river Agueda, which washes the walls, and is here crossed by a fine bridge. It has a cathedral, the earliest portion of which dates from the 12th c. The town generally has a mean appearance, and is not cleanly. During the Peninsular war, C. R., though of little strength itself, was considered a place of the utmost importance, as a key of Spain on the w., and was consequently an object of struggle both to the French and the allies. In 1810, June, the French, under Massena, invested the town, and after a gallant defense by the Spaniards, it was forced to surrender, July 10. The fact that Wellington was in the immediate vicinity, with an army of 30,000 men, and afforded no relief whatever, was a subject for outcry against the hero; but subsequent events at Torres Vedras showed that his policy was the right one. In 1812, Jan., after a siege of 11 days, the place was assaulted, and after a bloody struggle, the British captured the town. The storming is one of the most brilliant achievements in British military annals, and important as it was brilliant; 150 guns fell into the hands of the captors, besides vast stores of every kind, and the moral effect was even more than proportionately great. Pop. about 9,000.

CIVES, n. plu. *sīvz*, same as CHIVES, which see [OF. *cive*, a scallion or unset leek—from L. *cæpa*, an onion]: a sort of garlic or leek.

CIVET, n. *sĭv'ĕt* [F. *civette;* It. *zibetto*—from Ar. *zébed:*

Pers. *zabád*]: substance taken from a gland or bag under the tail of the civet-cat—used as a perfume.

CIVET (*Viverra*): genus of carnivorous quadrupeds, of the family *Viverridæ* (q.v.), having the body elongated, in some of the species as much as in the weasel tribe; the head also is long, and the muzzle sharp. The ears are short, broad, and rounded. The feet have five toes, and the claws are only semi-retractile. There is a more or less conspicuous erectile mane along the back, as in hyænas. Between the anus and the sexual organs, in both male and female, there is a large double pouch, in which is secreted a peculiar odoriferous fatty substance, called *Civet*, much used as a perfume. The use of this pouch and its secretion to the animal is not well known. There are several species of C., of which the best known is the common or African C. or Civet-cat (*V. civetta*), native of the n. of Africa. The common C. is from two to three ft. long. The height is from ten inches to a foot; the hair long, brownish gray, with numerous black bands and spots. The C. preys on birds, small quadrupeds, and reptiles, and generally takes its prey by surprise. It is often kept in confinement for the sake of its perfume, which is removed from the bag about twice a week by means of a small spatula, and is ob-

Civet.

tained most abundantly from the male, and especially after he has been irritated. A dram is a large quantity to obtain at a time. The civets kept for this purpose are fed on raw flesh; the young partly on farinaceous food. The town of Enfras, in Abyssinia, is a principal seat of the C. trade, and great numbers are there kept.

CIVIALE, *se-ve-âl'*, JEAN: 1792–1867, June 13; b. near Thiézac, Auvergne: French surgeon, originator of lithotrity. He studied under Dupuytren in Paris, and from an early age concentrated his thoughts and labors on this substitute for the dangerous operation of lithotomy: i.e., he aimed to crush stone in the bladder before removing it. From 1827 he published several books on this topic: his *Guide pratique* appeared after his death. He was a member of the Med. Academy, an associate of the Institute, and an officer of the Legion of Honor. He died in Paris.

CIVIC, a. *siv'ĭk* [L. *civis*, a citizen]: pertaining to a city or citizen. CIV'IL, a. *-ĭl* [F. *civil*—from L. *cĭvilis*, belong

ing to citizens]: relating to the ordinary affairs and government of the people of any country, as *civil rights and privileges*, etc.; political as opposed to criminal; intestine as opposed to foreign; ordinary life as distinguished from military; courteous; gentle and obliging; affable; kind; polite. CIV'ILLY, ad. *-lĭ*, in a manner relating to government; not after a criminal manner; without rudeness; politely. CIVILITY, n. *sĭ-vĭl'ĭ-tĭ*, politeness; courtesy; obliging behavior in the treatment of others. CIVIL'ITIES, n. plu. *-ĭ-tĭz*, acts of politeness or courtesy, etc. CIVIL'IAN, n. *-ĭ-ăn*, one engaged in the ordinary pursuits of life; in *India*, a member of the civil service: ADJ. opposed to *military* or *naval*. CIVILIZATION, n. *sĭv'ĭ-lī-zā'shŭn* [F.—L.]: state of being refined in manners; state of being free from the grossness of savage life. CIV'ILIZE, v. *-līz*, to reclaim from barbarism; to make less gross in manners. CIV'ILI'ZING, imp. CIV'ILIZED, pp. *-līzd*. CIV'ILIZER, n. one who or that which. CIVICS, a study of the means and duties of good citizenship. CIVIL ACTION, any action at law not criminal. CIVIL SERVICE, the body of persons in the pay of the state, as distinguished from the naval and military services. CIVIL DEATH, the being banished or outlawed. CIVIL LAW, the Roman law; the ordinary laws, written and unwritten, that govern a nation or commonwealth, as opposed to criminal law. CIVIL LIST, the whole of the sovereign's revenue in his own distinct capacity; the expenditure of the royal household. CIVIL WAR, a war between parties of the inhabitants of the same country.—SYN. of 'civil': polite; obliging; accommodating; courteous; complaisant; considerate.

CIVIC CROWN: reward bestowed in ancient Rome for saving a citizen's life in battle. Usually of oak leaves, it had in earlier days been of elm or beech. The recipient could wear it on all public occasions, and was held in much honor: it gave him a place next the senators, and exempted him with his father and grandfather, from all public burdens.

CIVIDALÉ, *chē-vē-dâ'lā:* walled town of Venetia, n. Italy, about ten m. e.n.e. of Udine; on the Natisone, here crossed by a bridge. Cividale is the ancient *Forum Julii*, and its collegiate church, a fine Gothic edifice, dates from the 8th c. In its archives are some valuable manuscripts. It has silk and cotton factories. Pop. abt. 4,500.

CIV'IL DEATH: in English law, cessation of the person's legal rights while the physical life remains; banishment or outlawry. 'Civil death occurs where a man, by act of parliament or judgment of law, is attainted of treason or felony; for immediately upon such attainder he loses (subject indeed to some exceptions) his civil rights and capacities, and becomes, as it were, *dead* in law. It also took place formerly where any man abjured the realm by the process of the common law; or "entered into religion," that is, went into a monastery, and became there a monk professed; in which cases he was absolutely dead

in law, and his next heir should have the estate. Even in the times of popery, the law of England took no cognizance of *profession* in any foreign country, because the fact could not be tried in English courts; and therefore, since the Reformation, this disability is held to be abolished; as also the disability of banishment, consequent upon abjuration, by stat. 21 Jac. I. c. 28.' Stephen's *Com.*, i., 142, 143.

CIVIL ESTAB'LISHMENTS, of the Army: certain departments which, though provided for out of the army estimates, are non-military in their organization; such as those connected with the manufacture of munitions of war.

CIVIL'IAN: term with three meanings, distinct, though intimately related: 1. In a popular sense, it signifies a person whose pursuits are civil: i.e., not military (in England neither military nor clerical); 2. As a law-term, it means, either a person who is versed in the principles and rules in accordance with which civil rights may be freely, blamelessly, and successfully maintained in society generally, or in the particular state to which he belongs—or 3. One who has made a special study of these rules and principles as exhibited in the laws and government of Rome (the Roman civil law). The civil law of Rome exercised such influence upon the formation of the municipal systems of almost all the states of modern Europe, that those who devoted themselves to its study were regarded as 'civil' or municipal lawyers *par excellence*. From the more learned training which this study demanded, C. came often to be used as synonymous with professor or doctor of law, as distinct from practitioner of law; the former being generally more deeply versed in the Roman law than the latter; and this in its turn led to its being loosely applied to the international lawyers of the 17th c. (Grotius, Puffendorf, etc.), who generally belonged to the class of civilians in the sense of Romanists, and who, though their subject was altogether different, quoted largely and derived many analogies from the Roman jurisprudence. At present, in Great Britain, inasmuch as no class of persons prosecute law as a *science* as opposed to an *art*, the term C. has there reverted to its narrower mediæval sense of student or teacher of the Roman civil law; thus Savigny is spoken of as a C., but not Story. For the special sense of C. in England, see Ecclesiastical Courts: also Admiralty Courts.—In the United States the word seldom has a fixed technical meaning; it usually denotes one engaged in the ordinary pursuits of civil life.

CIVILIZA'TION [see Civic]: general term designating the condition of the more advanced nations, as contrasted with those that are looked upon as barbarians or savages. We term the leading nations of Europe civilized; the Chinese and Tatars less so; the Red Indians, Australians, Esquimaux, least of all. 'Whatever be the characteristics of what we call savage life, the contrary of these, or the qualities which society puts on as it throws off these, constitute civilization. Thus, a savage tribe consists of a handful of individuals, wandering or thinly scattered over a vast tract

of country; a dense population, therefore, dwelling in fixed habitations, and largely collected together in towns and villages, we term civilized. In savage communities, each person shifts for himself: except in war—and even then very imperfectly—we seldom see any joint operations carried on by the union of many; nor do savages, in general, find much pleasure in each other's society. Whenever, therefore, we find human beings acting together for common purposes in large bodies, and enjoying the pleasures of social intercourse, we term them civilized.' And so of other characteristics. *Dissertations* by J. S. Mill, art. 'Civilization.'

When we seek an exact definition of the term C., we meet a variety of views implying a certain complication in the subject. The original derivation of the word points to that polish of manners that distinguishes the inhabitants of cities [Lat. *cives*] from the rustic population; but the use of the word has greatly outgrown this limitation. Guizot has given a definition which has become generally known, to the effect that we are to include in C. the improvement of man both socially and in his individual capacity. But there is difficulty in settling what is *improvement*. That people are far from agreed on this point is evident from the use of the phrase 'vices of civilization.' How are we to distinguish its vices from its virtues? Moreover, this definition is inadequate, because instead of defining C., it only states one of the things which C. includes.

An exact and exhaustive definition of C. might require a volume or a library. Definitions may be as various as the different standards which are accepted as decisive by differing minds. Scarcely can more be sought in a brief statement than a general indication of the principle at the root of C., and of some of the chief aids by which it is advanced.

C. may be defined as the harmonious development of men in all their social relations in the community, resulting from a profound inner harmony established in each man's individual character. Its root—its principle of life—must thus be moral and spiritual; otherwise man becomes but a knowing, graceful, well-trained animal; yet its growth, and bloom, and fruit are necessarily produced in the various spheres of man's intellectual, esthetic, and even material and animal life. The moral and spiritual forces that do not develop themselves into these spheres may have certain good results, but *civilization* is not one of these results. In proportion as this harmonious human life of individuals has strength to pervade all the departments of man's social relations, in that proportion C. exists. And, when established thus, C. reacts to heighten individual character and attainment.

C. is aided by natural advantages, such as those of soil and climate, and of good mental and bodily constitution, and of dexterity and skill; but these cannot make C. For a nation in savagery, it has been well said that 'the permanent changes in the condition and arrangements of man's life effected by his own intelligence and exertions' guided by good will, 'make up human civilization.'

## CIVIL LAW.

Prominent results of civilization, which are also in turn causes of its advance, are the following: *Morality* involving *good-will*, ultimately dependent on *Religion*, so that for a right morality there must be the right religion; *Government*, securing public order *by means of* individual liberty; *Education*, the systematic training of the human faculties, diffused through the community; *Industrial Arts*, turning to advantage material resources; *Social Communication*, abundant and swift conveyance for *thought* in order that mind may quicken mind, and for *men* in order that selfish isolation may be precluded and all interests be interwoven into a commonwealth; *Science*, indispensable to some of the foregoing, and a universal help; *Literature and the Fine Arts*, tending to refine and exalt the sentiments; *Polished manners*, the trained and systematized gestures of the *good-will* first spoken of, so that thus good-will both stands at the root and appears as the fruit of civilization. See works on the History of Civilization by Guizot, Draper, Buckle; and on the anthropological side, Lubbock's *Origin of Civilization*, and Mr. Tylor's works.

CIVIL LAW: distinctively, the system of jurisprudence developed by the ancient Romans. The phrase lends itself to ambiguity because of the various meanings attributed to the adjective. It is often employed in the sense of municipal law, signifying those rules of conduct prescribed by a nation, state or town to its own citizens; the Roman law-writers themselves sometimes distinguished between *jus civile*, peculiar to local civic relations, and *jus gentium*, common to the several countries under imperial control. In another sense it denotes ideal justice (*jus naturale*), rather than the conventional rules judicially enforced. And in ordinary use the expression is contrasted with public or international law, the law of crimes, ecclesiastical law, and military rule. Accurately, however, 'civil law' and 'Roman law' are convertible terms.

Knowledge of the subjects centres in and around Justinian's famous compilation, *the Corpus Juris Civilis*, which alone of the ancient legal memorials has been preserved intact; other codes, revisions, and treatises both preceded and followed it, but we know them, if at all, in fragments only. Assuming that the decline of imperial Rome began with its division (A.D. 395) between the two sons of Theodosius, the *Corpus Juris* is the product of a dying nation. The western empire had fallen half a century before Justinian, the Slav, ascended the Byzantine throne and the barren insignia of its power had been sent to the eastern capital. Though nearly a thousand years were to elapse before Constantinople should finally yield to the invaders, they were to be years of progressive decay; absorbed in the long struggle for national life, the genius of Rome was but little exercised in the improvement of her laws. So it fell out that an absolute monarch, himself a barbarian, gave in defective Latin to a people called Roman but speaking Greek, a comprehensive redaction of the laws current in the period of their highest development, the essence of ten

centuries of legislation in varied forms. And this 'body of the civil law,' the Roman church aside, remains to this day the most significant and enduring monument of their departed glory.

Very early in his reign Justinian directed that the laws of the empire be collected and rearranged in simplified form. Their annals could then be traced with more or less certainty for at least a thousand years; the decemvril law of the 'twelve tables,' dating from B.C. 450, was yet in force, greatly modified of course by the progress of ages. The latest systematic compilation was the incomplete Theodosian code, already venerable. The unofficial law-writings regarded as authoritative had long been ancient literature; the era of constructive jurisprudence was far in the past. Among the jurists chosen for the work the master mind was that of Tribonian, who was or soon became Justinian's chief law-minister. As originally planned the new law-book was to be drawn from two principal sources and divided accordingly, the first from the *constitutiones* of the emperors. Every document emanating from the throne and designed to operate as law was a *constitutio*, and these were of several kinds: (1) *Orationes*, laws proposed to the senate for ratification—a matter of form only, since the emperor's will always prevailed; (2) *Edicta*, laws put forth by the emperor in his own right; (3) *Mandata*, instructions issued to various officials for their guidance in the administration of justice; (4) *Decreta*, decisions rendered by the monarch in law-cases submitted to him for final judgment, and (5) *Rescripta*, answers returned by the emperor to questions sent in by litigants or, more commonly, by officers ruling in distant parts. Though professing to come from the emperor in person, the value of these 'constitutions' as expressions of the law was enhanced by their real authorship, eminent jurists being usually employed to compose them. Everything in them regarded by the revisers as of subsisting authority was now extracted and transferred to the new *Codex Constitutionum*, condensed, simplified, and no doubt amended where amendment seemed needful. This branch of the undertaking was completed and officially published in April, 529.

The second part, called *Pandects* (all-receiving) or the Digest, is made up of excerpts from the writings of famous experts in the law. It forms the largest and by far the most important factor of the corpus, the part through which its influence has extended to modern times. Unlike the Codex, the Digest deals principally with private relations; the public law of the former has never obtained acceptance among the nations of Europe. The work is composed of 50 parts, or 'books,' each subdivided into titles appropriately headed. Sixteen lawyers and law-professors collaborated with Tribonian in its preparation. Thirty-nine writers are represented in the 9,000 extracts preserved, some in but part of a sentence, others in several pages; each being preceded by the author's name and the

title of his treatise. The several editors gathered and reshaped from the books assigned to them for examination such passages as they deemed worthy of preservation, the selections being then brought together and subjected to joint collation and revision; after which they were distributed to their places in the scheme of arrangement. Preparatory for this, however, more than a year was spent in drafting a series of *decisiones* (directions) which were issued in the emperor's name to guide the editors in the methods of selection; so the actual work of revision was not fairly entered upon until late in the year 530, leaving less than three years for the principal task. Evidences of haste appear, aside from the errors inevitable in such labors, but the completed work, issued Nov. 533, evinces diligence and skill of the highest order.

A third component of the Corpus Juris, known to English readers as the *Institutes of Justinian*, appeared a few weeks in advance of the Digest—a sort of by-product of the larger undertaking. The *Institutiones* (instructions) is a short introductory treatise composed by Tribonian and two law-professors from among his associates. Apparently, modeled upon a similar work by Gaius, dating from the second century, it admirably serves the needs of beginners in the law. It consists of definitions and elementary teachings, arranged in four books and covering: (1) Domestic relations, including master and slave; (2) Property and the modes of acquiring it; (3) Obligations, or contracts; and (4) Actions, or court procedure. Pupils in the common law are seldom required to learn more of the Roman system than is here revealed.

While the Digest was forming the growing knowledge of its compilers disclosed to them that the earlier work, the *Codex Constitutionum*, was far from perfect; parts of it were in conflict with principles laid down by the sages, and omissions, repetitions, and other faults called loudly for correction. It was therefore re-written throughout in the form which it has since retained and the new edition, replacing the old, was promulgated, Nov. 534. Thus within six years after his accession to the throne Justinian had accomplished a complete reconstruction of the law. He meant that thenceforth the Corpus Juris should be the sole repository of legal knowledge. No other books, not even the sources whence these were drawn, were to be cited or read. Extraordinary precautions were taken to guard the text against corruption. Copyists were prohibited from using the commonest abbreviations in their transcriptions. Greek translations were necessarily permitted, but they must be literal versions sentence by sentence; and in cases of variance the original must govern. Brief summaries were also allowed, presenting the substance of a book or a title and collating parallel passages, but all else tending to introduce confusion was rigorously forbidden; even honest attempts to remove doubts inherent in the words employed. New controversies, and the revival of old ones, were especially apprehended from the

meddling of commentators, wherefore no commentaries were suffered; the new-born code would have been strangled in its cradle had such commands been enforced. Voluminous glosses, chiefly found upon the margins of old copies, elucidate sections otherwise inexplicable and happily prove that liberty of comment could not be wholly suppressed.

Moreover Justinian and his advisers soon learned that the new books of the law, however valuable, were sadly incomplete; the need of further legislation, real or imagined, constantly arose. This led during the next decade to a series of supplemental decrees, called *Novellæ Constitutiones* (recent enactments), which in all editions now extant are added to the original books, being known in English as the 'Novels' of Justinian. Some of these are in Latin, some in both Latin and Greek, but most appeared in the latter tongue alone. Thus was formed the great storehouse of legal learning which, of all the enterprises of a vigorous and resourceful monarch, alone perpetuates his fame.

Notwithstanding its obvious imperfections the Corpus Juris Civilis was too good for its time. It represents the law of an earlier and a grander Rome, whereof its compilers were admiring students; they sought to restore an ancient order and revive a waning glory. But the empire drifted to its fall, while Justinian's codes were lost in the gathering dèbris. Though in parts of Italy the reformed laws remained in force and were continuously taught in the schools, it was not until the end of the twelfth century that their study was entered upon with marked interest or success. The demands of a renewing civilization eagerly appropriated the garnered fruits of former experience and thenceforth cultivated them with diligence. Chiefly through the maxims, precepts, and instances preserved in the Pandects, the spirit of Rome in its better days has given law to the greater part of Europe and to considerable sections of the western world. Italy, France, Spain, the Netherlands, Austro-Hungary, even Germany and the Scandinavian countries, main sources of our common law, are to-day governed by the juristic conceptions of ancient Rome; a statement also true of the South American states and Mexico, of French Canada and Louisiana. And more of the civil law is imbedded in English jurisprudence than was formerly acknowledged. It is more and more perceived that the two systems had a common origin. Both sprang largely from the customs of the people, and human nature, varying but little in its essence, begets similar customs in kindred races. Usages grow into formal enactments, and laws though imposed by despotic power are moulded by local habit. So in this as in other branches of historical research, the unbending lines of scholastic separation between systems break down under fuller knowledge. The canon law, based on the civil, was early carried by the Church into England; and the influence of Rome was largely operative in forming the doctrines of equity which the rigidity of the common law forced into being.

## CIVIL SERVICE.

CIVIL SERVICE: body of persons other than naval or military, in pay of the state; also the duty or work rendered by such persons. Candidates for the Civil Service are subjected to examination in open and unrestricted competition, to determine their fitness and ability. The system is in effect in all departments of the government in Great Britain and the United States, and to a greater or less degree in European governments.

CIVIL SERVICE IN THE UNITED STATES. From small beginnings the civil service of the United States has grown till it has reached the number of more than 100,000 persons employed; and that of each state government has had a corresponding increase. The presence of so vast a body of officials under a democratic system has led to many abuses, and suggested problems among the most important for the body of American citizens. Although elected executive and judicial officials and the appointed officers of legislative bodies are included in the general term civil service, yet it has been applied mostly to appointed officials of the executive department. The constitution of 1787 provided that the president should nominate, and, by and with the advice and consent of the senate, should appoint ambassadors, other public ministers and consuls, judges of the supreme court, and all other officers of the United States, whose appointments were not otherwise provided for in other sections of the document; but congress might vest the appointment of such inferior officers as they might think proper in the president alone, in the courts of law, or in the heads of departments. Taken in connection with the action of the first congress in deciding that the power of removal of officers should belong to the president alone, without need of the concurrence of the senate, these provisions put in the hands of the chief executive and his principal advisers a vast body of patronage, which might be used to reward political services, and in various ways turned to the advantage of parties, or factions, or personal ambitions rather than of the country.

At first the civil service of the United States was managed with little abuse. That of New York and of Pennsylvania, however, early became the prey of designing and adroit politicians, who made it an engine of political management and partisan success. Something of such practice was introduced into the federal government by Mr. Jefferson, but the time at which the infection most fully reached that government, was in the administration of Gen. Jackson. He and the politicians who surrounded him inaugurated that policy of sweeping removals for partisan reasons and of appointments used as rewards, which is called the 'spoils system.' The name is derived from a phrase in a speech of Senator Marcy, 1832, in which, speaking of the politicians of his day, especially those of New York, he said, 'they see nothing wrong in the rule that to the victor belong the spoils of the enemy.' From that time this system became a regular part of the operations of

the government, whichever party controlled it; the result was often a complete disregard of the principle that 'public office is a public trust,' wide departures from business-like management of public affairs, and great corruption of American politics.

Attention being awakened, in 1853 and 1855 pass examinations for entrance into the service of the departments at Washington were instituted; but this had little remedial effect. In 1871 congress, at the instance of Pres. Grant, authorized the president to establish a system of competitive examinations, and to appoint a civil-service commission to supervise the system. After two years, however, congress refused to continue the necessary appropriations. In 1883, Jan. 16, congress passed 'An act to regulate and improve the civil service of the United States,' generally known as the Civil-Service Act. The provisions of this act apply to only a portion of the federal civil service, the portion, namely, which is called the 'classified service.' They do not apply to any elected officer, to any laborer, nor, unless specially extended, to any officer of such position as to be subject to confirmation of appointment by the senate. Altogether there are about 327,000 positions in the executive civil service, more than half of which, or 184,178, are subject to competitive examination. These fall mostly into three classes, those in the executive departments at Washington, those in the customs service, and those in the postal service. The act is made applicable to every customs office or post-office which has, or shall attain to, a force of 50 or more officials. In general, it is the employés receiving salaries between $800 and $2,000 who are included under its operation. Of those not included, the majority consists of postmasters of the fourth and fifth classes. The spirit and purport of the act have been understood, and officially declared, to be against appointment to, or discharge from, the public service on mere political grounds; though it was conceded that efficiency of administration required that certain prominent officials—a very small proportion of the whole number—should be in political accord with the party which the popular vote had called to conduct the government.

The act authorizes the president to appoint three civil-service commissioners, at a salary of $3,500 and travelling expenses, whose duty it shall be to prepare rules and regulations under the act, to supervise examinations under them, to investigate and report concerning their enforcement. The commission has a chief examiner, a secretary and other officers. In Washington and at other places where examinations are to be held, a number of officials selected by the commission form in each case a board of examiners. These boards hold competitive examinations, free to all, for entrance into the classified service, and appointments and promotions can be made only from among those who have passed these examina-

tions, except that a preference is to be shown in the case of men honorably discharged from the army and navy. Appointments are to be apportioned among the states and territories according to population, and are accompanied by a period of probation. Political assessments exacted from office-holders by members of congress or office-holders are forbidden, habitual drunkards are excluded, and penalties are provided for violations of the act. Under this act, the commission has organized boards of examiners and held frequent examinations of a practical character. There are two grades of examination for clerkships—the general examination and the limited examinations, the latter being of lower grade. These qualify for clerkships in any department; there are also special and supplementary examinations for positions requiring special training or acquirements. Except in the case of honorably-discharged soldiers and sailors applicants must not be younger than 18 nor older than 45 (in the classified postal service, 35). The examinations are open to all persons qualified in respect to age, citizenship, legal residence, character, and health. During the fiscal year ended 1906, June 30, 96,619 persons were examined, 70,910 passed, and 28,555 were appointed. Of those appointed, 9,150 were rural letter-carriers. In addition to these, mechanics and workmen at navy yards are appointed on registration tests of fitness given by a board of labor employment at each yard. During the year, 20,658 applications were made; 20,435 were registered, and 10,495 were appointed. Nearly seven hundred different kinds of examinations were held, each one of which involved different tests. Examinations are held twice a year in each state and territory, the places and states being publicly announced. In case of a vacancy not filled by promotion, reduction, transfer, or reinstatement, the highest three of the sex called for on the appropriate register are certified for appointment, the appointment being considered in appointments at Washington. In the absence of eligibles, or when the work is of short duration, temporary appointments, without examination, are permitted. The number of women applying for ordinary clerical places is greatly in excess of the calls of appointing officers. Persons who served in the military or naval service of the United States, and were discharged by reason of disabilities resulting from wounds or sickness incurred in the line of duty, are, under the civil service rules, given certain preferences. They are released from all maximum age limitations, are eligible for appointment at a grade of 65, while all others are obliged to obtain a grade of 70, and are certified to appointing officers before all others. Subject to the other conditions of the rules, a veteran of the rebellion or of the war with Spain, or the widow of any such person, or any army nurse of either war, may be reinstated without regard to the length of time he or she has been separated from the service.

ROBERT E. LEE AND HIS GENERALS.

## CIVIL WAR IN THE UNITED STATES.

CIVIL WAR IN THE UNITED STATES, THE: The remote causes of the war were questions of State Rights and African slavery; the immediate cause was the effort of some of the States to throw off their allegiance to the Federal Union, and to establish a Southern Confederacy. South Carolina took the lead by passing an ordinance of secession 1860, Dec. 20, declaring that 'the union now existing between South Carolina and other States, under the name of the United States of America, is hereby dissolved.' On the night of Dec. 26, Maj. Robt. Anderson, commanding United States forces in Charleston Harbor, fearing an attack on Fort Moultrie, transferred his command to Fort Sumter, a stronger work in the centre of the harbor. The South Carolina State forces seized the public buildings and other Government properties in Charleston, took possession of Forts Moultrie and Pinckney and demanded that Anderson withdraw from Fort Sumter. The first hostile shot of the war was fired 1861, Jan. 9, at the steamer 'Star of the West,' as she entered Charleston Harbor to land supplies for Major Anderson. The vessel was driven back. Other States followed the action of South Carolina in seceding and seizing forts and other Government property; Mississippi, 1861, Jan. 9; Florida, Jan. 10; Alabama, Jan. 11; Georgia, Jan. 19; Louisiana, Jan. 26; Texas, Feb. 1. On Feb. 4, representatives from the seven States named met at Montgomery, Ala., and on the 8th, adopted a 'provisional' constitution. On the next day Jefferson Davis of Mississippi was elected President, and A. H. Stephens of Georgia, Vice-President of the Confederate State of America (q.v.). Abraham Lincoln was inaugurated as President of the United States 1861, March 4. On April 8 Jefferson Davis called for 20,000 volunteers, and four days later the Confederates, under Gen. Beauregard, began a bombardment of Fort Sumter, resulting in its surrender on the 14th. On the 15th President Lincoln called for 75,000 men to put down the rebellion, and summoned Congress to meet July 4. On the 19th he proclaimed a blockade of the Southern ports. By many acts of the Confederate Congress Jefferson Davis was authorized to accept all volunteers deemed necessary to maintain the Southern Confederacy, and a general conscription law was passed. Virginia seceded April 17, and seized the arsenal at Harper's Ferry on the 19th, and the Norfolk Navy Yard on the 20th with a vast amount of ordnance and other war supplies. On the 23d Gen. R. E. Lee was appointed Commander-in-Chief of the Virginia forces, and on May 7 was ordered by Governor Letcher to take command of all the Confederate troops that had been ordered to the State. He concentrated the main body of his command at Manassas Junction, 33 miles from Washington, with large detachments at Harper's Ferry, on the Lower Potomac, and on the York peninsula. On May 3, President Lincoln called for 42,034 three-year volunteers; 22,714 men to increase the regular army; and 18,000 for the increase of the navy. On May 6.

Arkansas and Tennessee seceded, followed on the 20th by North Carolina. The slave States of Delaware, Maryland, Kentucky and Missouri were held to the Union by the efforts of their loyal citizens, aided by the Federal Government. The western counties of Virginia repudiated the action of the Convention that had passed an ordinance of secession, and on June 17 organized a new government, which was recognized by President Lincoln on the 26th. This section of the State was subsequently, 1863, June 20, admitted into the Union as the State of West Virginia. United States troops crossed the Potomac into Virginia, May 24, encamped on the heights opposite Washington and occupied Alexandria. General Butler, who had been assigned to the command of the Department of Virginia and North Carolina, May 22, sent a column from Fort Monroe up the peninsula, which was defeated at Big Bethel, June 10, by a much inferior force, and fell back to Fort Monroe. The United States Congress met in extra session July 4, legalized all the President's acts, voted 500,000 more men, and $500,000,000 for the prosecution of the war for the Union, and the entire North gave freely of men and money to sustain the general Government. Like unanimity prevailed in the seceded States to sustain the Southern Confederacy. On July 20 the Confederate Congress met in Richmond, which had been chosen as the Capital of the Confederacy. Late in May, Gen. McClellan, who had been assigned to the command of the Department of the Ohio May 13, crossed the Ohio river at several points, dispersed the Confederate forces in some minor affairs, and defeated Gen. Garnett's army at Rich Mountain, July 11, Garnett being killed two days later while conducting a retreat. This action, and a movement of Gen. Cox up the Kanahwa Valley, gave Gen. McClellan control of Northwestern Virginia. The later part of July Gen. R. E. Lee was ordered to the command of the Confederate forces in Western Virginia. He planned a very elaborate campaign for the recovery of the lost ground, but failed in its execution, and Nov. 5 was ordered to the command of the Department of South Carolina, Georgia and Florida. Gen. McDowell at the head of four divisions started from his camp opposite Washington on the march for Richmond, July 16. He was met and defeated at Bull Run (q.v.), July 21, by the Confederates under Gens. Johnston and Beauregard; the number engaged on each side was about 18,000; the Union loss, killed and wounded 1,492; the Confederate loss, 1,869. Gen. Butler captured the Confederate forts at Hatteras Inlet Aug. 29. A Union force crossed the upper Potomac at Ball's Bluff, Va., Oct. 21, and was driven back with great loss, its commander Col. Baker, a Senator from Oregon, being killed. Gen. McClellan succeeded Gen. Scott in command of the armies of the United States Nov. 1. A Union naval force under Admiral Dupont, captured forts Walker and Beauregard at Port Royal, S. C., Nov. 7. On Nov. 8, J. M. Mason and

John Slidell, Confederate commissioners to Great Britain and France, respectively were taken from the British mail steamer Trent, by Capt. Wilkes of the San Jacinto. War with Great Britain was averted by the disavowal of the act by the United States Government, and the surrender of the Commissioners, Dec. 27. On Dec. 20, a Union brigade under Gen. Ord defeated a Confederate brigade under Gen. J. E. B. Stuart at Dranesville, Va. In the West, Missouri was saved to the Union by the prompt and joint action of Capt. N. Lyon, U. S. A., and F. P. Blair, Jr. Lyon broke up a secession camp near St. Louis, May 10, and a few days later drove the secession governor, Jackson, from Jefferson City, the State Capital. Col. Sigel was defeated at Carthage (q.v.) by Gov. Jackson July 5, and on Aug. 10 was fought the battle of Wilson's Creek in which Gen. Lyon was defeated and killed. The Confederates now held Southern Missouri. On July 25 Gen. Fremont assumed command in Missouri, under President Lincoln's orders to pacify the State and open the navigation of the Mississippi River to the Gulf of Mexico. Gen. Grant occupied Paducah, Ky., Sept. 6, at the mouth of the Tennessee river, and was defeated at Belmont, Mo., Nov. 7. After much delay Fremont moved against the Confederates, who had defeated Lyon, and occupied Springfield. He was succeeded in command by Gen. Hunter Nov. 2, who withdrew to Rolla, leaving the Confederates in possession of Southwest Missouri. Gen. Hallack succeeded Hunter in command, Nov. 19, and on Nov. 30 Gen. Sterling Price called upon the people of Missouri for 50,000 volunteers to aid in recovering the State to the Southern Confederacy.

Gen George H. Thomas was attacked near Mill Springs, Ky., by a superior Confederate force under Gen. Crittenden, 1862, Jan. 19, which was defeated and driven across the Cumberland river. On Feb. 6, a combined land and naval force, under Gen. Grant and Commodore Foote, captured Fort Henry on the Tennessee river, and Grant marched to Fort Donelson, on the Cumberland, which was taken on the 16th, with about 15,000 prisoners and 57 guns. The Union loss in killed and wounded was 2,662; the Confederate loss about 2,000. The Confeder ates were driven from Missouri into Arkansas, followed by Gen. S. R. Custis and defeated March 7–8 at Pea Ridge. A Union army under Gen. Grant was encamped at Shiloh or Pittsburg Landing on the Tennessee River, preparatory to an advance on Corinth, Miss., where it was attacked, April 6, by a Confederate army under Gen. A. S. Johnston. After a severe fight of two days the Confederates retreated to Corinth. Gen. Johnston was killed near the close of the first day's fight, and was succeeded in command by Gen. Beauregard. The Union losses killed and wounded were 10,162; the Confederate loss 9,735. On April 8, Gen. Pope captured Island No. 10 on the Mississippi. Gen. Halleck assumed command of the army at Pittsburg Landing April 11. Pope was

brought from Island No. 10, and the armies advanced on Corinth, which was abandoned by Gen. Beauregard and occupied by Halleck May 30. In July Gen. Bragg, moving through Chattanooga and Cumberland Gap, invaded Kentucky, defeated a Union force at Richmond, Ky., Aug. 30, and in Oct. 8 fought Gen. Buell's army at Perryville, was unsuccessful and fell back to East Tennessee. The Union loss at Perryville was 3,696 killed and wounded; the Confederate loss 3,145. Gen. Rosecrans with 9,000 men marched from Corinth, Miss., to Iuka, where, Sept. 19, he attacked a Confederate force of 12,000 men, under Gen. Sterling Price, and drove it from the place with a loss of 742 killed and wounded. The Confederates report their loss as 494. Gen. Earl Van Dorn, with about 22,000 men attacked Gen. Rosecrans at Corinth, Oct. 3–4, and was defeated with a loss of 2,528 killed and wounded; the Union loss was 2,396. Gen. Grant moved south along the Mississippi Central Railroad for the rear of Vicksburg, and Dec. 20 Gen. Earl Van Dorn captured his base of supplies at Holly Springs, and obliged him to fall back. Gen. Sherman having descended the Mississippi River on transports carrying 30,000 men, landed them and was defeated Dec. 29 in an assault on Chickasaw Bayou. His loss was 1,213 killed and wounded; the Confederate loss 177. Gen. Bragg, after his retreat from Kentucky, concentrated his army at Chattanooga, whence he marched to Murfreesboro, Tenn., where, Dec. 31, he was attacked by Gen. Rosecrans, who had succeeded Gen. Buell in command of the Army of the Cumberland. After a desperate fight, ending 1863, Jan. 2, Bragg was defeated and fell back to Tullahoma, Tenn. The Union loss was 9,220 killed and wounded; the Confederate loss 9,239. New Orleans was captured 1862, Apr. 25. In the East Roanoke Island was captured 1862, Feb. 8, by an expedition under Gen. Burnside and Commodore Goldsborough. The great naval battle in Hampton Roads between the Monitor and the Merrimac, was fought March 9. Gen. Gilmore captured Fort Pulaski near Savannah, Ga., April 11. A campaign in the Shenandoah Valley, Va., began March 23 by the defeat of 'Stonewall' Jackson at Kernstown, and the advance of a Union army under Gen. N. P. Banks to Strasburg. Jackson fell back, attacked and defeated a Union force under Gen. Schenck at McDowell, May 8, and followed up this success by forcing Banks from Strasburg, defeating him at Front Royal, May 23, and Winchester, May 25, and driving him out of the valley and across the Potomac at Williamsport. An unsuccessful effort to entrap Jackson brought on the battle of Cross Keys, June 8, and Port Republic, June 8–9, in both of which the Union forces were defeated. Jackson left the valley soon after to join Gen. Lee in an attack upon the Army of the Potomac in front of Richmond. The Army of the Potomac under Gen. McClellan was transported to the vicinity of Fort Monroe early in April, laid siege to Yorktown, which was captured May 4,

1. Attack on Confederate Works during Siege of Vicksburg.
2. Death of General Zollicoffer, Battle of Mill Springs, Ky.

the battle of Williamsburg was fought May 5, and the army marched to the Chickahominy a few miles from Richmond. The battle of Fair Oaks, (q.v.), or Seven Pines, was fought May 31–June 1, the Union loss being 4,384 killed and wounded; the Confederate loss 5,729. Gen. J. E. Johnston commanding the Confederate forces was severely wounded, and was succeeded in command June 2 by Gen. R. E. Lee. Lee called Jackson from the Shenandoah Valley and assumed the offensive by crossing the Chickahominy and attacking McClellan's right at Beaver Dam Creek, June 26, and was repulsed with great loss. The bloody battle of Gaines's Mill took place June 27, resulting in a Confederate victory. McClellan now marched for James River, pursued by Lee. The battle of Savage Station was fought June 29; Glendale June 30, and Malvern Hill July 1. This was the close of the seven days' battle in which the Union loss was 15,849; the Confederate loss 20,614. Gen. Halleck was assigned as commander-in-chief of the Armies of the United States, July 11, and ordered Gen. McClellan to abandon the campaign on the peninsula and transport his army to the vicinity of Washington. Gen. Lee took advantage of McClellan's movement by advancing against Gen. Pope, who had been assigned to command the united forces of Fremont, Banks and McDowell, drove him from the line of the Rappahannock, and defeated him at the second battle of Bull Run, Aug. 29–30, and followed up his success by an invasion of Maryland, crossing the Potomac at, or near, Leesburg, Sept. 5–6. Gen. McClellan defeated Lee at South Mountain Sept. 14. Harper's Ferry with its Union garrison of 12,520 men, surrendered to 'Stonewall' Jackson Sept. 15, and Sept. 17 was fought the battle of Antietam (q.v.), the bloodiest day in American history, in which the Union loss was 11,648 killed and wounded; the Confederate loss 9,298. Lee recrossed the Potomac, and President Lincoln issued a proclamation Sept. 22, declaring the emancipation of all slaves in the States at that time in a state of rebellion, 1863, Jan. 1 Gen. Burnside relieved Gen. McClellan of command of the Army of the Potomac, 1862, Nov. 7, and on Dec. 13, fought the battle of Fredericksburg against Gen. Lee, and was defeated, losing 10,884 killed and wounded; Lee's loss, 4,656.

President Lincoln issued a proclamation of emancipation 1863, Jan. 1. Gen. Hooker succeeded Gen. Burnside in command of the Army of the Potomac, Jan. 26, and was defeated at Chancellorsville May 2–4, with a loss of 11,368 killed and wounded. The Confederate loss was 10,746. Gen. Lee again invaded the North, Hooker was relieved by Gen. Meade June 28. and the battle of Gettysburg (q.v.) was fought July 1–3, Lee being defeated with a loss of 20,451 killed, wounded and missing; the Union loss was 23,003. Lee recrossed the Potomac followed by Meade, and until the close of the year both armies engaged in maneuvering, with some heavy engagements, notably in the Mine Run campaign, Nov. 26—Dec. 2.

In the West, Gen. Grant after several unsuccessful efforts to reach Vicksburg from the North, crossed the Mississippi River below it, advanced inland, fought battles at Port Gibson, Miss., May 3; Raymond on the 12th; Jackson on the 14th, Champion's Hill on the 16th; the Big Black on the 17th, and next day invested Vicksburg. Gen. Pemberton commanding the Confederate garrison, after a gallant resistance, surrendered July 4 with 31,000 men, 172 guns, and 60,000 stands of arms. The Union loss in the Vicksburg campaign, May 1—July 4, was 8,338 killed and wounded. Port Hudson surrendered to Gen. Banks, July 8, and the Mississippi River was opened to the Gulf. Gen. Burnside advanced from Lexington, Ky., into East Tennessee, and occupied Knoxville Sept. 4. Gen. Rosecrans advanced from Tullahoma, Tenn., forced Gen. Bragg out of Chattanooga, Tenn., which he occupied Sept. 9, and on Sept. 19–20 was defeated by Gen. Bragg at the battle of Chickamauga (q.v.), Ga., and fell back to Chattanooga. The Union loss, killed, wounded and missing was 16,179; the Confederate loss about 18,000. Gen. Bragg followed Rosecrans and besieged Chattanooga. The Departments of the Cumberland and Mississippi were consolidated under Gen. Grant; Rosecrans was succeeded in command of the Army of the Cumberland by Gen. Thomas. Two corps under Gen. Hooker were transferred from the Army of the Potomac to Chattanooga; Gen. Sherman commanding the Army of the Tennessee was brought from the Mississippi to Chattanooga, and in Nov. 23–25 was fought the battle of Chattanooga (q.v.), including Lookout Mountain, in which Gen. Bragg was defeated, and fell back to Dalton, Ga. At the close of the battle Gen. Sherman marched to the relief of Burnside who had been besieged at Knoxville by Gen. Longstreet.

During these operations in the East and West there had been great activity by the naval forces on the Atlantic and Gulf coasts, the most important being in Charleston Harbor in an unsuccessful attempt to reduce Fort Sumter. The year closed with the Union forces controlling the Mississippi River, holding Missouri, Kentucky, Tennessee, the greater part of Arkansas, and large parts of Louisiana, Mississippi and Florida.

Early in 1864, Gen. Banks, supported by a fleet under Admiral Porter, undertook an expedition up Red River which ended in failure. Gen. Grant, who had been commissioned Lieut.-Gen., was placed in command of the Armies of the Union, March 12. In April he planned a combined movement of the principal armies of his command. In the East the movement began under his personal supervision, by the advance of the Army of the Potomac, 120,000 strong, under Gen. Meade, May. 4, from Culpepper C. H. across the Rapidan, resulting in the battle of the Wilderness. (q.v.), May 5–6, followed by the battle of Spotsylvania C. H. (q.v.), and the bloody repulse at Cold Harbor (q.v.), June 3. On June 12 Grant

crossed the Chickahominy, transferred his army to the south bank of James River, intending to surprise and capture Petersburg, but was checked by Gen. Lee. After several unsuccessful assaults upon Lee's lines, Grant settled into a long investment which was begun 1864, June 19, and continued until 1865, April 2. The Confederates met this close siege of Richmond and Petersburg by a counter movement northward. Gen. Early moved down the Shenandoah Valley dispersing the Union forces at Winchester and Martinsburg, crossed the Potomac, marched to Fredericksburg, Md., defeated Gen. Wallace on the morning of June 9, and on the 11th appeared in front of Washington, from which he was repulsed on the 12th, and withdrew to the Shenandoah Valley, recrossing the Potomac at White's Ford near Leesburg on the 14th. Gen. Sheridan was put in command of an army to oppose Early Aug. 5, and after some skirmishing and maneuvering, defeated him at Winchester Sept. 19, at Fisher's Hill on the 29th, and again at Cedar Creek on Oct. 19, which practically ended the Valley campaign for the year. The Kearsage engaged and sunk the Confederate cruiser Alabama off Cherbourg, France, June 19. Admiral Farragut engaged and destroyed a Confederate fleet in Mobile Bay Aug. 5. In the West Gen. Sherman started from Chattanooga May 6, and by a series of battles and flanking movements, forced Gen. J. E. Johnston back to Atlanta. Gen. Johnston was relieved by Gen. Hood July 18, and on the 20th Hood attacked the Union right at Peach Tree Creek, and was repulsed with great loss; he was again defeated at the battle of Atlanta, July 22, and again at Ezra Church July 28. Sherman moved on Jonesboro, south of Atlanta, threatened Hood's communications and caused the evacuation of Atlanta, and its occupation, Sept. 2, by a corps of Sherman's army. Gen. Sherman, with 60,000 men started from Atlanta on his 'march to the sea,' Nov. 15, leaving Gen. Thomas in command in the middle west. He carried Fort McAlister Dec. 13, and occupied Savannah on the 21st. While Gen. Sherman was marching through Georgia, Gen. Hood was advancing on Nashville. He fought the battle of Franklin (q.v.) Nov. 30, and two days later appeared in front of Nashville, where he was signally defeated by Thomas Dec. 15–16, and his army practically destroyed. Abraham Lincoln was reelected President of the United States Nov. 8; his opposing candidate was Gen. McClellan. Lincoln received 212 of the 233 electoral votes cast. The popular vote was 2,223,035 for Lincoln; 1,811,714 for McClellan.

Fort Fisher, commanding the Port of Wilmington, N. C., was captured 1865, Jan. 15. Wilmington was taken Feb. 22d. On Feb. 1, Gen. Sherman began his march northward from Savannah, through South Carolina, occupied Columbia on the 17th, and on the next day Charleston was evacuated by Gen. Hardee and occupied by Union troops. Sherman pushed on into North Carolina, occupied

Fayetteville March 11, defeated Gen. J. E. Johnston at Bentonville on the 21st, and entered Goldsboro on the 23d. Gen. Sheridan advanced up the Shenandoah Valley from Winchester, Feb. 27, defeated Gen. Early at Waynesboro March 2, and a few days thereafter joined Grant before Petersburg. Gen. J. H. Wilson at the head of a Union cavalry force of 13,000 men organized at Nashville moved South, crossed the Tennessee River March 22 and captured Selma, Montgomery, Columbus and Macon. Gen. Grant, who had continued to press Lee's lines at Petersburg and Richmond, on March 25 ordered a general advance for the 29th, but on the night of the 25th Gen. Lee made a counter attack, broke Grant's lines and captured Fort Stedman, which was soon retaken. Gen. Sheridan defeated Gen. Pickett at Five Forks, April 1, taking 6,000 prisoners, and severing Lee's communications with Richmond. Gen. Grant made a general assault along the Confederate lines, April 2, which were broken in places, and that night Lee abandoned Richmond and Petersburg, and retreated toward Lynchburg, but was intercepted, and on the 9th surrendered his army at Appomattox C. H. President Lincoln was assassinated April 14. Gen. Sherman moved from Goldsboro on Raleigh which was occupied April 13, and Gen. Johnston surrendered to him at Greensboro April 26. The surrender of Lee and Johnston was followed by the surrender of the Confederate forces in Alabama to Gen. Canby May 4, and the Confederate troops west of the Mississippi, under Gen. Kirby Smith, surrendered on the 26th. Jefferson Davis, who had escaped from Richmond was captured by a part of Gen. Wilson's cavalry command at Irvinsville, Ga., May 10.

The number of Union soldiers borne on the enlistment rolls during the war was 2,778,304, of whom 294,266 were drafted. Some enlisted more than once and their names are duplicated, sometimes triplicated, and it is estimated that the individuals enlisted did not number more than 2,000,000. The casualties in the Union armies and navy were 360,222, of whom 110,070 were killed in action or died of wounds, and 250,152 died from disease, accident or other causes, including 30,192 who died while prisoners of war. The Confederate force in the field, enrolled in the armies of the Confederacy was somewhat in excess of 1,000,000 men. The loss during the war in killed and mortally wounded was somewhat less than 100,000; that from disease, accident and other cause is unknown. 30,152 died while prisoners of war.

CIVITA VECCHIA, *chē′vē-tâ vĕk′-kē-â:* Italian city, province of Rome; on the Mediterranean, lat. 42° 4′ n., long. 11° 45′ e. Its ancient name was *Centum Cellæ.* The harbor of C. V. is one of the best in Italy, and was constructed by the emperor Trajan; the town, indeed, owed its origin entirely to the port of this emperor, and hence it was known also as Portus Trajani. The harbor is formed by two artificial moles projecting into the sea, while a third, constructed between the two, serves to protect the harbor

from the heavy sea; upon this third and outward mole there is a good light-house, some 80 ft. above the sea. Within the port there is a small dock and an arsenal. The town of Civita Vecchia is small, and has no buildings of any note except a large church in the principal street. The streets are ill paved and narrow, and the inhabitants poor. It is a free port, and is regularly visited by steam packets from Marseilles, Leghorn, Naples, Genoa, Messina, and Malta; while the majority of travellers visiting Rome land here. It is famous among the modern Italians for its oysters, which are extremely small, but delicious to the taste. Pop. about 13,000.

CIVITELLA DEL TRONTO, *chē-vē-tĕl'lâ dĕl tron'to:* town of s. Italy, province of Teramo, 10 m. n. of Teramo. It is on a rock, and is fortified and defended by a strong castle. C. del T. is historically interesting as the place where, 1053, Robert Guiscard and his Normans gained a complete victory over the forces of Pope Leo IX. and the emperor Henry III. of Germany; and also for the siege it sustained in 1557 against the French and papal army under the Duke of Guise, who was finally forced to retreat.

CLABBER, n. *klăb'bėr:* curdled milk; called also *Bonny-clabber.*

CLACHAN, n. *klăk'ăn* [Gael. *clachan,* a circle of stones, stones]: in *Scot.,* properly a village in which there is a church or place of worship; a hamlet.

CLACK, v. *klăk* [F. *claquer,* to flap or clap: Icel. *klak,* a certain noise of the domestic fowl; *klaka,* to twitter as a swallow: Dut. *klak,* a crack; *klacken,* to strike, to smack]: to make a sharp noise suddenly; to talk incessantly: N. a sharp continued noise; the valve of a pump-piston; one of the valves in a steam-engine. CLACK'ER, n. one who or that which clacks. CLACK'ING, imp. CLACKED, pp. *klăkt.* CLACK-DISH, the beggar's dish or box with a lid, which they formerly rattled to attract attention.

CLACKMANNAN, *klăk-măn'nan:* county town of Clackmannanshire, in the s. part of the county, on the Devon, near its confluence with the Forth, 9 m. e. of Stirling. It lies on ground rising 190 ft. above the rich carse-land of the plain of the Forth, which is rich also in coal, iron and limestone. Clackmannan was formerly a royal burgh, and is mentioned as such in the acts of parliament of James V. 1540 and '43. From a bull of Pope Celestine III., 1195, it appears that at this early date the church and its chapels, with 40 acres of land, belonged to the Abbey of Cambuskenneth. In 1330, King David Bruce resided at Clackmannan. In 1358-9, King David II. confirmed to Sir Robert de Bruce the castle and barony of C., with the lands of Kennet and others; and from that period to the present, the Bruces have been proprietors in this parish. Pop. about 2,000.

CLACKMANNANSHIRE, *klăk-măn'nan'shėr:* smallest county of Scotland, bounded n. and w. by Perthshire and the Ochil Hills; e. by Perthshire and Fifeshire; s. by the

Forth, separating it from Stirlingshire. Its greatest length is 10 m.; area, 48 sq. m. It consists chiefly of the valley of the North Devon, gently declining from the green Ochil Hills to the Forth. The Ochils consist of trap, especially amygdaloid, claystone, porphyry, and greenstone, and rise in Bencleugh (properly, Benclach), 2,352 ft., and Dunmyat, or Demyat, 1,345. A ridge of high ground with inferior soil, often resting on clay, runs w. through the middle of Clackmannanshire, between the very fertile alluvial lands resting on the coal-measures in the s., and the North Devon valley in the n., where the soil is loamy, and rests on gravel, and also on the coal-measures, which extend to the base of the Ochils. The chief minerals are ironstone, sandstone, greenstone, coal, limestone, silver, copper, antimony. The chief rivers are the North Devon rising in the s. of Perthshire, and the Black Devon rising in the s.w. of Fifeshire; both run w. across C. into the Forth. The river Forth is navigable for vessels of 500 tons up to Alloa, at which port ships of 700 tons register have been built. The chief crops are wheat, barley, and oats. The 'Hillfoots' have long been celebrated for their woolen manufactures, chiefly in Tartan shawls and plaids, and have become favorably known in the production of tweeds. The district is famed likewise for its ale, there being seven breweries in the county. There are also extensive distilleries. There are manufactures of green-glass bottles, earthenware, bricks and tiles, also timber trade and shipbuilding. The chief exports are iron and coal. The columnar greenstone of Abbey Craig, near Stirling, has come into use for grinding flour, which it does nearly as well as the French burr-stones. Clackmannanshire contains four parishes. The chief towns are Clackmannan, the county town; Alloa, the most important place; and Dollar, noted for its endowed educational establishment. Clackmannanshire, with Kinross-shire, returns one member to parliament; but the county occupies the anomalous position of having parishes within its circumference politically—Alva in Stirlingshire, and Tulliallan and Culross in Perthshire—which it does not embrace judicially. In Clackmannanshire have been found Roman stone coffins, sepulchral vases, and old Roman coins. The Marquis of Montrose, 1645, burned Castle Campbell, now a noble ruin situated on a wild but easily accessible eminence, on the brow of a hill immediately behind Dollar. In Clackmannanshire, George Meikle constructed, 1787, the first effective threshing-machine in Scotland. Pop. (1871) 23,747; (1881) 25,680; (1901) 32,029.

CLAD, v. *klăd* [see CLOTH]. CLAD, applied to sheep that have not been shorn.

CLADANTHI, n. plu. *klă-dăn'thī* [Gr. *klados*, a tender branch, a twig; *anthos*, a flower]: in *bot.*, flowers that terminate a lateral branch in mosses.

CLADENCHYMA, n. plu. *klă-dĕn'kĭ-mă* [Gr. *klados*, a tender branch; *eng'chuma*, an infusion]: in *bot.*, tissue composed of branching cells, as in some hairs.

MEETING OF ROBERT E. LEE AND U. S. GRANT.
Near Appomattox Court House, Virginia, April 10, 1865.

CLADIUM, *klā′dĭŭm* [Gr. *clados*, a branch or twig]: genus of plants of the nat. ord. *Cyperaceæ*, of which one species, *C. Mariscus* is a native of Britain, particularly common in the bogs and fens of Cambridgeshire, where hundreds of acres are almost entirely covered with it. It is 3–5 ft. high, with a rounded, leafy stem, the keel and margins of the leaves rough and almost prickly. It is consequently hurtful to cattle. It is used for thatching, and in Cambridgeshire also for lighting fires.

CLAFLIN, Mary Bucklin: an American prose-writer; 1825, July-1896, June 13; wife of Gov. Claflin of Massachusetts; was a trustee of Boston University for 18 years and of Wellesley College from its foundation till her death. Her publications include *Brampton Sketches; Recollections of Whittier; Under the Elms*, etc.

CLAGGETT, *klăg′ĕt*, Thomas John, d.d.: 1742, Oct. 2—1816, Aug. 2; b. White's Landing, Prince George co., Md.; first bishop of the Episc. Church in Md., and the first consecrated in America. He graduated at Princeton 1762, received orders in England 1767, and was rector in Calvert co., and Anne Arundel co., retiring to his estate during the early years of the revolution. He was consecrated at New York 1792, Sep. 17, Bp. Seabury joining, thus linking the Scottish with the Anglican succession. He was chaplain to the United States senate when it first met at Washington, 1800. He died at Croom, Md.

CLAIM, v. *klām* [OF. *clamer*, or *claimer*, to cry out, to call for—from L. *clamo*, I cry out: Dan. *klemte*, to toll: Gael. *glam*, to bawl—*lit.*, to shout out one's title or right]: to seek or demand as a right; to demand as due; to have a right or title to: N. a demand as of right; a right or title to anything; the thing claimed. Claim′ing, imp. Claimed, pp. *klāmd*. Claim′ant, n. *-ănt*, one who demands anything as his right. Claim′able, a. *-ă-bl*. Clamant, a. *klā′mănt*, crying loudly; that loudly calls for immediate attention or redress.—Syn. of 'claim, n.': demand; right; pretension; privilege; prerogative.

CLAIM, in Law: assertion of a right in anything that is in the possession of another, or at least out of the claimant's possession. Claims are either verbal or by action and relate either to lands or to goods and chattels, their object being generally to preserve a title which otherwise would be in danger of being lost.

CLAIM OF LIBERTY, in English Law: suit or petition to the queen in the court of exchequer, to have liberties and franchises confirmed there by the attorney-general (Tomlins' *Law Dic.*)

CLAIMS, Court of: tribunal for settlement of private claims against the United States. Until 1854, all private claims against the govt. of the United States had to take the form of petitions to congress. Such petitions accumulated in great numbers, and it was felt to be impossible for congress, burdened with public affairs, to give adequate attention to the investigation and adjudication of these

claims. Accordingly in December of that year a bill was introduced establishing a commission for the examination and adjustment of such claims. Instead of this, an act was passed, 1855, Feb., erecting a permanent and independent court for the purpose. This court was to consist of three judges, and was in each case to report to congress its opinions, with the reasons and evidence on which they were founded. The mass of business was very great, and the practice of reference to congress resulted in a rehearing of the case by the committee on claims, and defeated the intention of economizing time. Accordingly, in 1863, two judges were added to the court, and reference to congress abolished. An appeal by either party to the supreme court was allowed in cases involving more than $3,000, and by the defendants in other cases.

The jurisdiction of the court extends to all claims founded upon any law of congress or upon any regulation of an executive department, or upon any express or implied contract with the United States government, and to all claims which may be referred to it by either house of congress; to all counter-claims or other demands on the part of the government against any claimant; and to all claims of disbursing officers for relief from responsibility on account of losses of government property in their custody. A six-years' limitation upon claims has been imposed by statute. Aliens, whose government accords to citizens of the United States the privileges of prosecuting claims against it in its courts, may prosecute claims against the United States in this court. Congress has from time to time given the court jurisdiction, for a limited period, over particular cases or classes of cases. In addition to its work in deciding cases provision was made by an act of 1883 called the 'Bowman Act,' that when any claim *or matter* is pending before either house of congress which involves the investigation and determination of facts, it may be transmitted to the court of claims for hearing; the findings of fact are then reported. The same act also authorizes the head of any executive department to transmit to the court any claim or matter involving controverted questions of fact or law, and to obtain the opinion of the court thereon. The court sits in Washington, in the same building with the department of justice; but claimants may take depositions at any other place. The defense of all claims is intrusted to the attorney-gen. of the United States, who assigns to that duty one of the assistant attorneys-general. The court decides all cases without a jury.

CLAIR, *klār*, St.: river of N. America, being that part of the St. Lawrence, in its largest sense, which carries into Lake St. Clair the waters of Lake Huron. It is 30 m. long, and half a mile broad, and easily navigable, its depth being 50 feet.

Lake St. Clair measures 30 m. in length by 12 in average width, and communicates at its s.w. end with Lake Erie through the Detroit river.

CLAIRAC, *klā′râk′:* town of France, dept. of Lot-et-Garonne, on the Lot, about 16 m. n.w. of Agen. It has flour and paper mills, and considerable trade. C. is notable as the first place in the s. of France that embraced the doctrines of the Reformation, which it did in 1527, on the example of its abbot, Gerard Rouselle. It was the scene of frequent contests between Roman Catholics and Huguenots. Pop. 3,000.

CLAIRAUT, *klā-rō′*, Alexis Claude: 1713, May 7—1765, May 17; b. Paris: mathematician. He early showed most remarkable aptitude for mathematics, and was considered worthy of admission to the Acad. of Sciences, while he was only 18 years of age. C. wrote a great number of scientific papers, but his fame now rests principally upon his *Figure of the Earth*, in which he promulgated the theorem, that the variation of gravity on the surface of the earth, regarded as an elliptic spheroid, was altogether independent of the law of density, the opposite opinion having been previously held; on his explanation of the motion of the lunar apogee, a point left unexplained by Newton; and on his computation of the time of the return of Halley's comet. He died at Paris.

CLAIRE, *klār*, Saint, or Santa Clara: 1193-1253, Aug. 11: of a rich and noble family of Assisi, in the duchy of Spoletto. Attracted by the eloquence and piety of St. Francis of Assisi, she abandoned the pleasures of social life, in which she had previously indulged, and betook herself to solitude, prayer, and mystic meditation. Her religious emotions were ardent; and deeming herself specially called of God to the work, she founded an order of nuns 1212, and, after obtaining great reputation for sanctity died at Assisi. Two years afterward she was canonized by Alexander IV.

CLAIRE, St. Nuns of the Order of: religious order founded by St. Claire, with the counsel and help of St. Francis of Assisi, 1212. At first, the nuns observed the rule of St. Benedict, but in 1224 the austerity of this rule was mitigated by St. Francis, and again modified by Urban IV. 1264. Those who follow the rule as modified by Urban are called *Urbanists;* the other and austerer portion of the sisterhood, *Damianists.* The order rapidly increased and convents are numerous to the present day in Italy, France, Belgium, Bavaria, Asia, and America. The nuns devote themselves chiefly to the education of the young.

CLAIRVAUX, *klär-vō′:* village in the dept. of Aube, about 10 m. above Bar-sur-Aube, on the left bank of the river; notable as the site of the once famous Cistercian Abbey (Clara Vallis), founded 1114 by St. Bernard, who presided over it till his death 1153, when he was buried in the church. Besides the original buildings, a new and splendid convent was afterward erected, and a church which was reckoned a masterpiece of architecture, but was destroyed at the restoration. There was shown in the convent a monster cask, called 'St. Bernard,' which con-

tained 800 tuns. The abbey, which had at one time a revenue of 120,000 livres, was suppressed at the revolution, and the extensive buildings are now used as a work-house and house of correction.

CLAIRVOYANCE, n. *clār-voy′ănce*, [F. *clair*, clear and *voyant*, seeing]: The term belongs to the group of alleged powers transcending normal perception and thus revealing what is normally not visible or what occurs at great distances. Such a belief has existed from ancient times and was developed particularly in connection with the notions of mediæval magic. In such a system, the possession of occult and superhuman powers was regarded as the distinctive trait of the adept. In popular superstition the belief has been peculiarly persistent and has been described as a kind of second sight, enabling the gifted seer to observe what is happening at far-away places. As a folk-lore belief, it was associated with the power to predict the future. The modern use of the term was much influenced by the incorporation of the doctrine into the system of Mesmer and his followers at the beginning of the 19th century. His 'mesmerized' subjects or sensitives, were called somnambules and were able, it was alleged, to diagnose and prescribe for disease by seeing through this clairvoyance (or clear seeing) the actual condition of the organs of the patient. The ability to read and describe objects with the eyes bandaged was another favorite test. Phrenology and modern spiritualism in turn incorporated the doctrine, the former making way for a clairvoyant faculty and the latter regarding clairvoyance as the natural power of a 'medium.' The history of the doctrine of clairvoyance must thus be traced within the history of divination, of popular superstition, of older beliefs in magic, and of such modern systems as mesmerism, phrenology, spiritualism (qq.v.). The attempt to formulate scientifically the possibility of a power of perception through other than the recognized channels of sensation has resulted in the term TELEPATHY (q.v.). There is no doubt that the basis for some aspects of this ancient belief is to be found in the exalted sensibility (see HYPERÆSTHESIA), displayed by hysterical persons, as well as in the tendency to exaggerate and make much of coincidences. CLAIRVOYANT, n. one who practices clairvoyance.

CLAM, n. *klăm* [from *clamp*· comp. Gael. *glaim*, a large mouthful]: a kind of scallop or pecten, a bivalve shell-fish of different genera, whose furrowed valves clamp or fit closely together: see CHAMA: COCKLE: PECTEN: VENERIDÆ. The LONG CLAM is *Mya arenaria;* the ROUND CLAM is *Venus mercenaria.*

CLAM, v. *klăm* [AS. *clám* for *gelám*, clay: compare Sw. *klamp*, a block: Icel. *klambr*, a lump: Dut. *klompe*, a clod (see CLAMP)]: to clog or obstruct with glutinous matter; to be moist and slightly adhesive. CLAM′MING, imp. CLAMMED, pp. *klămd.* CLAMMY, a. *klăm′mĭ*, thick; adhesive; soft and sticky. CLAM′MINESS, n. state of being moist and sticky; tenacity in something soft.

CLAM, in Heraldry: term for an escalop or cockleshell: indicating that the bearer has been a Crusader, or has made long voyages by sea.

CLAM, BEAR'S PAW (*Hippopus maculatus*): bivalve mollusk of the South Seas, of the family *Tridacnidæ*. The shell is described as 'perhaps the most beautiful of bivalves, whether in regard to form, texture, or color.' It is therefore a favorite shell for ornamental purposes. It is transversely ovate, ventricose, ribbed, roughened with scaly inequalities, white, and spotted with red or purple.

CLAMANT, a.: see under CLAIM.

CLAMBER, v. *klăm'bėr* [Icel. *klambra*, to pinch closely together: Ger. *klammern*, to hold fast with the hands or claws: Dut. *klamre*, to clamp, to grasp]: to mount up by catching with the hands, claws, or tendrils; to climb among obstructions or with difficulty. CLAM'BERING. imp. CLAM'BERED, pp. *-bėrd*.

CLAME, v. *klām* [L. *clamo*, I call out]: in *OE.*, to call out; to name: N. a call.

CLAMOR, n. *klăm'ėr* [F. *clameur*—from Norm. F. *clamour;* OF. *clamor*—from L. *clāmor*, a loud noise—from *clāmārĕ*, to cry out: Sw. *klammer:* Gael. *clamras*, and *glambar*, uproar, brawl]: a great noise or outcry; a popular outcry: V. to complain noisily; to talk loudly; to make importunate demands. CLAM'ORING, imp. CLAM'ORED, pp. *-ėrd*. CLAM'ORER, n. *-ėr-ėr*, one who. CLAM'OROUS, *-ŏ-rŭs*, noisy in words; boisterous. CLAM'OROUSLY, ad. *-lĭ*. CLAM'OROUSNESS, n. the state of being loud or noisy.—SYN. of 'clamor, n.': cry; outcry; uproar; exclamation; acclamation; vociferation; shouting; bawling; tumult; noise.

CLAMP, n. *klămp* [Dut. *klamp*, a clamp; *klampen*, to hook things together: AS. *clam*, that which holds or retains, a bandage, a clasp: Ger. *klamm.* pinching; strait]: anything that fastens or binds; a piece of iron or other metal used to fasten a corner; a large quadrangular stack of bricks arranged for burning: V. to fasten or bind with clamps; to join two pieces of board together so that the grain of the one piece crosses the grain of the other, to prevent the wood from warping. CLAMP'ING, imp. CLAMPED, pp. *klămpt*.

CLAN, n. *klăn* [Gael. *clann*, children: L. *clien'tēs*, dependants]: children or descendants; a family; a tribe; a number of persons descended from one common stock under a chief. CLAN'SHIP, n. CLAN'NISH, a. *-nĭsh*, united by feelings and prejudices peculiar to clans; disposed to adhere closely, usually in a contemptuous sense. CLAN'NISHLY, ad. *-lĭ*. CLAN'NISHNESS, n. CLANS'MAN, n. one belonging to the same clan. The word clan became incorporated with the English language at least as early as the 17th c., to mean a body of men confederated together by common ancestry or any other tie, and in this sense it is used by Milton and by Dryden. It came to be applied almost exclusively to the several communities

of the Scottish Highlanders, as divided from each other topographically and by distinctive surnames. The word has sometimes been applied to those great Irish septs which at one time were a sort of separate states; but these, with their characteristic forms of internal government, were completely broken down by the power of the English predominance, before the word came into familiar use in the English language. In Scotland it was used in the 16th c. to designate the freebooters of the border as well as to the Celtic tribes of the Highlands; and there were two characteristics common to both—their predatory habits, and their distribution into communities, each with a common surname. In the act of the Scottish parliament of 1587, for instance, which requires landlords to find security for the conduct of their tenants, it is provided that those 'who have their lands lying in far highlands or borders, they making residence themselves in the inland and their tenants and inhabitants of their lands being of clans, or dependars on chieftans or the captains of the clans, whom the landlords are noways able to command, but only get their mails (or rents) of them, and no other service or obedience, shall noways be subject to this act but in manner following.' Then follow provisions for enforcing the law directly on the chieftans or captains of those clans residing in territories where the owner of the soil—generally the merely nominal owner, in terms of some useless charter—had no control. It was always the policy of the old law of Scotland to require all the Highland clans to have some respectable representative—a man of rank and substance, if possible—who should be security at court for their good conduct. Clans that could find no security were called 'broken clans,' and their members were outlaws, who might be hunted down like wild beasts. The Macgregors were a celebrated broken clan whom the law pursued for centuries with savage ingenuity. Among other inflictions, their name was proscribed, and such members of the clan as endeavored to live by peaceful industry in the Lowlands, adopted derivations from it; hence the names of Gregor, Gregory, and Gregorson, or Grierson. The clans are never treated in the old Scots acts with any respect, or otherwise than as nests of thieves and cutthroats. The following passage in the act of 1581 (c. 112), which virtually authorizes any Lowlander, injured by any member of a clan, to take vengeance against all or any of his clansmen, contains a picturesque, though, for a legislative enactment, certainly a very highly colored account of the social condition of the Highland clans in the 16th c. 'The said clans of thieves for the most part are companies of wicked men, coupled in wickedness by occasion of their surnames or near dwellings together, or through keeping society in theft or receipt of theft, not subjected to the ordinar course of justice, nor to any ane landlord that will make them answerable to the laws, but commonly dwelling on sundry men's lands against the good-will of their landlords, wherethrough true men oppressed by them can have no remeid at the hands of their masters, but for their

defense are oftentimes constrained to seek redress of their skaiths of the hail clan, or such of them as they happen to apprehend. Likewise the hail clan commonly bears feud for the hurt received by any member thereof, whether by execution of laws, or order of justice, or otherwise.' The Highland clans are often carelessly spoken of as a feudal institution, but in reality their distinctive character cannot be better understood than by keeping in view some peculiarities which set them in complete contrast with the feudal institutions of Britain. All feudality has a relation to land, from the serf, bound to the soil through the free vassal who possesses it, up to the superior or feudal lord, who commands services out of it. The descent to all rights connected with it is hereditary. Among the Highlanders, on the other hand, the relation was patriarchal, and had no connection with the land, save as the common dwelling-place of the tribe. It often happened, as the acts above quoted explain, that the head of a clan and the owner, according to feudal law, of the estates occupied by it, were two different persons. Clans did not acknowledge the purely feudal hereditary principle, and would elevate to the chiefship a brother or an uncle in preference to the son of a deceased chief. It is a curious illustration of this, that in the rebellion of 1715, the notorious Lord Lovat, who had just returned from France, being acknowledged by the Clan Fraser as their chief, drew them away from the rebel army, to which the proprietor of the Fraser estates had endeavored to attach them, and arrayed them on the government side.

CLANDESTINE, a. *klăn-dĕs'tĭn* [F. *clandestīn*—from L. *clandestīnus*, secret—from *clam*, privately: It. *clandestino*]: secret; hidden; private—applied to wrong actions. CLANDES'TINELY, ad. *-lĭ*. CLANDES'TINENESS, n. CLANDESTINE MORTGAGE, in England, a second mortgage of lands, already mortgaged for a valuable consideration, the first mortgage being concealed, or not discovered in writing to the second mortgagee. In such circumstances the mortgagor, or person so mortgaging his lands, has, in English law, no relief, or equity of redemption, against the second mortgagee. In the United States the term C. M. is not in use.

CLANDESTINE MAR'RIAGE: marriage contracted without due observance of ecclesiastical ceremonies, even where concealment is not the chief or only object of the parties.

CLANG, n. *klăng* [L. *clango*, I sound: Ger. *klang:* Dut. *klank*, sound: Gael. *gliong*, the ring of metal]: the sharp ringing sound of metallic bodies striking together; any like sound, as clang of trumpets; in *acoustics*, the compound sound formed by a musical note, and its overtones: V. to make a sharp ringing sound by striking metallic bodies together CLANG'ING, imp. CLANGED, pp. *klăngd* CLANGOUR, n. *klăng'gėr*, a sharp, ringing, or rattling sound.

CLANG, in psychology: (1) the musical note (simple

clang) i.e., a complex consisting of fundamental and harmonic overtones; (2) two or more simultaneous musical notes (compound clang), e.g., the musical chord. The employment of the term clang to designate the note was suggested by John Tyndall (*Lectures on Sound*, 2 ed., 1869, 117 ff) as the English equivalent of the German *Klang*. Some psychologists, following A. J. Ellis (trans. of H. Helmholtz, *On the Sensations of Tone, etc.*), prefer the term 'compound tone' to 'simple clang'.

CLANK, n. *klăngk* [Dut *klank*, sound, rumor: Dan. *klang*, a ringing sound (see CLANG)]: the rattling, ringing sound of armor or of metallic bodies: V. to rattle and sound, as prisoners *clank* their chains. CLANK'ING, imp. CLANKED, pp. *klăngkt*.

CLAN MACDUFF, LAW OF: privilege of immunity for homicide, anciently pertaining to those who could claim kindred with Macduff, Earl of Fife, within the ninth degree. Macduff's cross stood on the march of boundary between Fife and Strathearn, above Newburgh; and any homicide possessed of the right of clanship who could reach it, and who gave nine kye (cows) and a colpindash (or young cow), was free of the slaughter committed by him. Bell's *Dictionary*

CLAP, n. *klăp* [an imitative word: Icel. *klappa*, to pat, to clap the hands: Dan. *klappre*, to chatter, as the teeth with cold: Dut. *klappen*, to rattle]: a noise made by the meeting of bodies; a loud noise or a burst of sound, as of thunder; a stroke with the open hand: V. to strike quickly together so as to produce a sound; to strike gently with the palm of the hand; to place to or upon; to applaud by striking the palms of the hands together; to drive together; to thrust hastily; to enter upon quickly. CLAP'PING, imp. CLAPPED, pp. *klăpt*. CLAP'PER, one who, or the thing which; the tongue or striker of a bell. CLAP'TRAP, n. any trick or device to gain applause: ADJ. not genuine. To CLAP ON, to add or put on briskly. CLAPPER-CLAW, v. to beat and abuse; to scold or revile. To CLAP HANDS, in *OE.*, to plight mutual troth or vows, as lovers, by gripping hands. To CLAP TO, to put or place to quickly.

CLAP, *klăp*, ROGER: 1609, Apr. 6—1691, Feb. 2; b. Salcomb, Devonshire. He emigrated, 1630, to Dorchester, Mass., was in the legislature, 1652-66, and was capt. of Castle William, Boston Harbor, 1665-86. His later years were spent at Boston. His memoirs, written for his children, were published 1731, by T. Prince, and five times since, the last by the Dorchester Hist. Society.

CLAP, THOMAS: 1703, June 26—1767, Jan. 7; b. Scituate, Mass.: educator. He graduated at Harvard, 1722, was Congl. pastor at Windham, Conn., 1726–40, and rector or pres. of Yale College, 1740–65, the legislature paying his flock £53 as a compensation for the loss of their minister. At Yale he constructed the first orrery made in America, framed a new code of laws (the first book printed at New Haven, 1748) and a new charter, incorporating the 'Presi-

dent and Fellows,' procured the erection of a new college building and chapel, and in many ways promoted the interests of Yale. Engaging in controversy with Edwards and others, he met opposition, which led him to resign. He was an eminent mathematician and scientist for that day, and published a *History of Yale College* (1766) and several other books. He died at New Haven.

CLAP'-NET: ground-net much used by the bird-catchers of the s. of England, who supply the London market. It consists of two equal parts or sides, each about 12 yards long, by two yards and a half wide, and each having a slight frame. These are placed parallel to one another, fully four yards apart, and it is contrived that the pulling of a string closes them upon one another. Call-birds, either in small cages or fixed by braces, are placed about the net to decoy wild birds to the spot.

CLAPP, THEODORE: 1792, Mar. 29—1866, Apr. 17; b. Easthampton, Mass. He graduated at Yale 1814, studied theology at Andover 1818–19, and was ordained pastor of the 1st Presb. Church in New Orleans, 1822. Imbibing Universalist and Unitarian opinions, he organized the Church of the Messiah 1834. His ministrations to the sufferers from cholera, yellow fever, etc., in 20 epidemics, endeared him to the people: Judah Touro contributed largely to the maintenance of his services. He removed, 1857, to Louisville, Ky., and died there. He published *Sketches and Recollections of a 35 Years' Residence in New Orleans* (Boston, 1857), and *Theological Views* (1859).

CLAPPERTON, *klăp'ėr-ton*, HUGH: 1788–1827, Apr. 13; b. Annan, county of Dumfries, Scotland: British African explorer. At the age of 17 he went to sea; and being impressed into a man-of-war he distinguished himself by his services, and was appointed lieut. In 1817, he returned to England, and afterward was appointed by govt. on an exploring expedition to the interior of Africa—returning 1825. To solve the problem of the course of the Niger, C., now holding the rank of commander, started again with others, 1825, Aug. His companions died early on the journey, excepting Richard Lander, C.'s confidential servant. Detained at Sakkatu, by the Sultan Bello, the vexation and the hardships of the journey so affected his health that he died at Changary, near Sakkatu. C. was the first European that penetrated from the Bight of Benin into the interior of Africa, and followed the course of the Niger for a great distance. *Narrative of Travels and Discoveries in Northern and Central Africa in the years* 1822, 1823, *and* 1824, *by Denham, Clapperton, and Oudney* (Lond. 1826); *Journal of a Second Expedition into the Interior of Africa*, etc. (Lond. 1829); *Records of Clapperton's Last Expedition to Africa*, by Richard Lander (Lond. 1830).

CLAQUE, n. *klăk* [F. *claque*, to clap the hands, to applaud; an imitative word]: contrivance for securing the success of a public performance or production, by bestowing upon it preconcerted applause, to give the public, a

false notion of the impression that it has made. This artifice came first into operation in theatres and concert-rooms, and arose from friendly or party motives; but it is suspected of having spread into other departments of public life, not excepting even parliaments. CLAQUER, n. *klăk-ėr*, one of several hired to applaud a performer, or a performance, with the usual noisy demonstrations.

It was in Paris that the claque was first organized as a trade. One Sauton, 1820, established an office for the insurance of dramatic success (*Assurance des Succès Dramatiques*). The directors or managers of a theatre send an order to the office for whatever number of 'claquers' they think necessary. If the success of a piece seems doubtful, as many sometimes as from 300 to 500 of these people are furnished with gratis tickets, and are often instructed at the rehearsals at what particular places they are specially to applaud. How minutely the art is organized, may be seen from the exact division of functions among the several claquers. The 'commissar' is bound to learn the play by heart, and call the attention of the audience about him to the various beauties of the piece; the 'rieur' must laugh at every jest; the 'pleureur' (weeper) has to manifest his sensibility at the moving passages. This last part is generally assigned to women, in whom the frequent use of the handkerchief seems most natural. The 'chatouilleur' (tickler), on the other hand, endeavors, by distributing bonbons, snuff, theatre-bills, etc., and by lively conversation, to keep his neighbors in good humor; and lastly, the 'bisseur' calls *encore* with the utmost enthusiasm, at the conclusion of the specified pieces of music.

CLARE, *kläre* maritime county, province of Munster, Ireland; bounded n. by Galway and Galway Bay; e. and s. by the Shannon, and its expansion, Lough Derg, separating it from Tipperary, Limerick, and Kerry; w. by the Atlantic; between lat. 52° 32′ and 53° 7′ n., and long, 8° 25′ and 9° 58′ w. It is seventh in size of the Irish counties; length, 67m.; greatest breadth, 38; average, 21; 1,294 sq. m.—more than a half being arable, and a hundredth in wood. The surface is mostly hilly, with some mountains, bog, marsh, and rugged pasture. There is an undulating plain in the centre, from n. to s. On the e., lie the Inchiquin, Slieve Baughta, and Slieve Barnagh mountains, the highest being 1,758 ft., with rich pastures between. The mountains on the w. rise in Mount Callan to 1,282 ft. In the s., along the rivers, are rich loamy pastures called corcasses. The coast-line is 140 m. along the sea, and 80 along the Shannon estuary. The sea-line is high and rocky, in parts precipitous, with many isles and fantastic detached rocks. For 5 m. at Moher, the coast rises 400 ft. nearly perpendicular, and at another point 587 ft. The chief rivers are the Shannon (q.v.), and the Fergus, running s. 27 m. through the middle plain, and by an estuary five m. broad. The county has about 100 small lakes. Carboniferous limestone is a prevailing formation in the county. The s.w. third of the county forms part of the Munster coal-

field, with beds of ironstone, and thin seams of coal and culm. Clare has mines of lead, copper pyrites, and manganese, slate and flag quarries, a black marble quarry near Ennis, and many chalybeate springs. The soils are warm and friable on limestone, deep, rich loam on the Shannon, and cold and wet, with bogs and much timber on the coal tracts. Part of the limestone district is flooded in winter, but affords rich pasture in the summer, when the water dries up. In some places spring water is very scarce, and water can be procured only from the neighboring corcasses. The climate is moist and mild, but with frequent violent gales from the Atlantic. In 1880 there were 141,302 acres under crops, chiefly oats, potatoes, wheat, barley, and turnips. The principal trade is in grain and provisions. Fine sheep and cattle are reared on the pastures. The chief manufactures are coarse linens, hosiery, flannels, and friezes. Clare is divided into 11 baronies, 80 parishes, and 7 poor-law unions, with parts of three others. The chief towns are Ennis (county town), Kilrush, Ennistymon, and Killaloe. It returns two members to parliament. Clare has many cromlechs, raths, remains of abbeys, and old castles or towers, and several round towers, one at Kilrush 120 ft. high. Clare, till the time of Elizabeth, was called Thomond. An adventurer called Clare gave it its present name. Pop. (1841), 286,394; (1851) 212,428; (1871) 147,864; (1881) 141,457; (1901) 112,334.

CLARE COLLEGE, CAMBRIDGE: founded 1326, under the name of University Hall, by Richard Badew; burned 1338, and rebuilt and endowed by Elizabeth, Countess of Clare. Chaucer calls this college 'Solere' Hall. It has a master, 8 senior, and 10 junior fellows. The 18 fellowships are open to gentlemen of the degree B.A., or a higher, without restriction as to marriage. The master is elected by the senior and junior fellows. The buildings, in the Renaissance style, are among the most pleasing in the university. Richard III., pretending to be descended from the foundress, claimed the patronage of this Hall. The chapel was built 1535, previous to which an aisle of St. Edward's Church, where the masters and fellows were anciently interred, was used for the purpose.

CLARE ISLAND: island of Ireland, belonging to the county of Mayo; in the Atlantic, at the entrance of Clew Bay; in length 4 m., breadth 2 m. On its n.e. extremity is a lighthouse 487 ft. above the sea: lat. 53° 49′ 30° n., long. 9° 55′ 30° west.

CLAREMONT, *klär'mont:* town and post-village of Sullivan co., N. H., 48 m. w. by n. from Concord, and 97 from Portsmouth. The town, settled 1762, chartered 1764, is bounded on the w. by the Connecticut river from which the village is three m. back on the Sugar river; it is on the Concord and Claremont railroad, and near the Vt. Central. There is abundant water power, which runs several paper, cotton and woolen mills: many books have been printed or published here. Claremont is an attract-

ive town, has several weekly papers, several churches, a library, a national bank, a savings bank, and a high school to which Paran Stevens, a native of Claremont bequeathed $50,000, 1872. Pop. (1900) 6,498; (1910) 7,529.

CLARE'MONT: mansion or country-seat at Esher, Surrey, built by a noble family of that name. When the Princess Charlotte, heiress-apparent to the crown of England, was married to Prince Leopold of Saxe-Coburg, Claremont was assigned as their residence; and at the death of the princess 1817, the use of it was continued to the widower for life, with the allowance settled on him of £50,000. The prince lived here till his election as king of Belgium, after which time he only occasionally visited it. After the revolution of 1848, Feb. he placed it at the disposal of his father-in-law, ex-King Louis Philippe, who inhabited it till his death 1850, Aug. At the death of King Leopold 1865, an act was passed granting it to the queen for life, after which it was to revert to the country. The queen, 1882, March, bought the reversion of Claremont, and it is now the residence of the Duke of Edinburgh.

CLARENCE, n. *klăr'ĕns* [probably from some duke of *Clarence*]: a four-wheeled carriage with a single seat inside and a driver's seat.

CLARENCE, Duke of: title sometimes assigned to a younger male member of the royal family of Britain.

CLARENCIEUX, *klăr'ĕn-sĭ-ô:* first of the two heraldic provincial kings-of-arms, in England; the second being Norroy (q.v.). The jurisdiction of C. extends to all England south of the Trent, that of Norroy comprehending the portion n. of that river. C. is named after the Duke of Clarence, third son of King Edward III. It is his duty to visit his province, to survey the arms of all persons bearing coat-armor within it, to register descents and marriages, and to marshal the funerals of all persons who are not under the direction of *Garter*. He also grants arms within his province, with the approval of the earl marshall.

CLARENDON, Ark.: town, county seat of Monroe county, situated on the White river, on the St. Louis & S., and the Arkansas M. railroads, 58 miles southeast of Little Rock. It is a trade center for lumber and agricultural products. The manufacturing of wagons, staves, and other articles of wood supplies the local demands. Pop. 2,150.

CLARENDON, England, a lodge in Wiltshire, near Salisbury. It is noted chiefly for being the place where were written, in 1164, the *Constitutions of Clarendon*, defining the limits between the jurisdiction of the civil and ecclesiastical courts.

CLAR'ENDON, Constitutions of: laws made by a parliament, rather by a general council of the nobility and prelates, at Clarendon, a village of Wiltshire, 1164, whereby King Henry II. checked the power of the church, and greatly narrowed the total exemption which the clergy had claimed from the jurisdiction of the secular magistrate.

These famous ordinances, 16 in number, defined the limits of the patronage, as well as of the jurisdiction, of the pope in England, and provided that the crown should be entitled to interfere in the election to all vacant offices and dignities in the church. The constitutions were unanimously adopted, and Becket, the primate, reluctantly signed them, at the solicitation of his brethren. But they were at once rejected by Pope Alexander III., when sent to him for ratification, and Becket thereupon immediately retracted his consent, and imposed upon himself the severest penances for his weakness in giving it. This, and the other measures adopted by the haughty and imperious abp. to maintain the independence of his order, led to the unhappy disputes between him and the monarch, which terminated in the famous tragedy at Canterbury, commonly known as the *martyrdom* of St. Thomas-à-Becket, the canonization of the saint, and the pilgrimages to his tomb, which subsequently became an institution of the Rom. Cath. Church. Notwithstanding the personal humiliation to which Henry submitted after Becket's death, most of the provisions of the constitutions of C. continued as permanent gains to the civil power. A masterly and dispassionate appreciation of the constitutions of C. will be found in Dr. Pauli's *Geschichte v. England;* and in Prof. Stubbs's *Select Charters illustrative of English Constitutional History,* the text of the constitutions is given.

CLARENDON, *klăr'ĕn-don,* Edward Hyde, Earl of: English historian and statesman, 1608, Feb. 18—1674, Dec.; b. Dinton, Wiltshire; son of a private gentleman. He was educated at Oxford; studied law under his uncle, Nicholas Hyde, chief-justice of the king's bench; was a member of the long parliament, and for some time spoke and voted on the side of the popular party; but on the breaking out of the civil wars in England, he attached himself to the royal cause, and in 1642 was appointed chancellor of the exchequer, knighted, and sworn of the privy council. Accompanying Prince Charles (Charles II.) to Jersey, he remained there two years, and began his *History of the Rebellion* (London, 1702–04; continuation, with Life, 1759), and wrote the various papers which appeared in the king's name, as answers to the manifestoes of the parliament, and which far surpassed in vigor and elegance the productions against which they were directed. In 1648, May, he went to Paris, and 1649, Nov., was sent on an unsuccessful mission for assistance from the Spanish court. He afterward went to the Hague, where, 1657, Charles II. appointed him high chancellor of England. At the Restoration, he was confirmed in that office, and elected chancellor of the Univ. of Oxford. In 1660, Nov., he was created baron Hyde, and in April, following, viscount Cornbury, and earl of Clarendon. In 1663, the earl of Bristol accused him of high treason in the house of lords; and though this charge failed, public indignation was excited against him by the ill success of the war with Holland, and the sale of Dunkirk to the French. The victim also of some court intrigues, he was deprived of his offices; and

he secretly withdrew to Calais, whence he sent his apology to the lords; but this writing was ordered, by both houses of parliament, to be burned by the common hangman. After living six years in exile, he died at Rouen, and was buried in Westminster Abbey. His daughter, Anne Hyde, became the wife, 1659, of the Duke of York, afterward James II., and was the mother of Anne and Mary, queens of Great Britain.

C. was, on the whole, both well-intentioned and wise. There can be no doubt that he loved his country sincerely, and was humanely and liberally disposed. He was too moderate for the troublous times in which he lived. Lacking enthusiasm, he failed to appreciate the position of the puritans; and, after a brief period spent in their service, he passed over to the camp of the royalists, but was never a bigoted partisan. His firmness, however, was not equal to his sagacity; hence arose the perplexities which ultimately occasioned his fall. C.'s private character was excellent, in an age when virtue was utterly unfashionable among noblemen.

CLARENDON, George William Frederick Villiers. Earl of: English statesman: 1800, Jan. 12—1870, June; descendant of Thomas Villiers, who, 1752, married the heiress of the last Lord Clarendon of the Hyde family, and was, 1756, made Baron Hyde, and 1776, Earl of Clarendon. Having studied at Cambridge, C. early entered the diplomatic service, and in 1833 was appointed to the then important post of ambassador at Madrid, where he acquired great influence, which he employed in establishing the government of Spain on a constitutional basis. On the death of his uncle, the third earl, without issue, 1838, he succeeded to the title, and returned to England to take his seat in the upper house. In 1840, he was appointed keeper of the great seal. When the whig ministry was broken up, 1841, he became an active member of the opposition; but warmly supported Sir Robert Peel in his measures for the abolition of the corn-laws. Under Lord John Russell's premiership, he became pres. of the board of trade, 1846, and the following year was appointed lord-lieut. of Ireland. He entered upon his duties in troublous times. The insurrectionary follies of Smith O'Brien and his coadjutors might have set the whole country in a blaze but for the prompt and decisive measures which C. adopted, which soon restored general tranquillity. At the same time, his tact and impartiality contributed to allay the exasperations of party. The severity of his proceedings against the orangemen on occasion of disturbances, 1849, was made the subject of a formal accusation in the house of lords; but C. made a convincing defense, and ministers declared their complete approval of his proceedings. When the Russell cabinet resigned, 1852, C. was replaced by the Earl of Eglinton; but on the formation of the Aberdeen ministry, he was intrusted with the seals of the foreign office. He held the same seals under Lord Palmerston, 1855–58; resumed them 1865; retired with his colleagues, 1866; and taking the same office once more, 1868, he retained it till his death.

CLARENDON SPRINGS, *klăr′ĕn-don:* hamlet of Vt., in Clarendon township, Rutand co., on Otter creek and the West Vt. railroad, 7 m. s.s.w. of Rutland. It derives its name from a number of mineral springs whose waters are reputed to be highly efficacious in the treatment of kidney and skin diseases, and is a popular summer resort for invalids, for whose comfort a large hotel is provided.

CLARE-OBSCURE, n. *klär-ŏb-skūr′*, also written CLARO-OBSCURO, n. *klā′rō-ŏb-skô′rō* [L. *clārus*, clear and *obscūrus*,, obscure: It. *chiaroscúro*, lights and shadows of a picture]: light and shade in a painting; a design of two colors: see CHIAR-OSCURO.

CLARET, n. *klăr′ĕt* [F. *clairet;* OF. *claret*, a red wine, somewhat clear—from L. *clarus*, clear]: originally, wines of a light-red color; but now a general name for the red wines of Bordeaux (q.v.).

CLARETIE, JULES: a French novelist and dramatist; b. Limoges, 1840, Dec. 3. His principal novels include *Madeleine Bertin; The Million; Monsieur the Minister; Noris, Manners of the Time; The American Woman;* etc. He also wrote some striking chapters on contemporary history, including *The Revolution of* 1870-1871; *Paris Besieged;* etc. His dramatic work relates mostly to the Revolution.

CLARIFY, v. *klăr′ĭ-fī* [F. *clarifier*, to clarify—from L. *clarĭficārĕ*—from L. *clārus*, clear; *facĭō*, I make]: to make clear; to render pure and bright. CLAR′IFYING, imp. CLAR′IFIED, pp. *-fīd.* CLAR′IFIER, n. *-fī-ẽr*, one who; that which makes clear. CLAR′IFICA′TION, n. *-ĭ-fĭ-kā′shŭn*, the act of purifying or refining; process of clearing a fluid from a turbid condition, as in the case of beer (q.v.), or in the action of gelatine in fining British wines. Natural waters containing much organic matter in mechanical suspension and in chemical solution are clarified by the addition of a little alum, which is precipitated with the organic matter, and the water then becomes healthful and refreshing. Liquids often are clarified by straining through several layers of cloth; and the addition of cold water to hot coffee, etc., causes a deposit to be thrown down, which clears the solution. The use of the Clearing-Nut (q.v.) for clarifying water is general in India.

CLARION, n. *klăr′ĭ-ŏn* [F. *clairon;* OF. *clarion*—from F. *clair*, clear—from mid. L. *clarĭānem*, a clarion—from L. *clārus*, clear: Sp. *clarin*, a trumpet: comp. Gael. *clar*, and *clarsach*, a harp], sometimes CLARIN: a trumpet with a narrow tube, more shrill in tone than the ordinary; an organ-stop of 4 ft. pitch. CLARIONET, n. *klăr′ĭ-ŏ-nĕt′* [F. *clarinette*], also CLAR′INET, n.: musical wind-instrument of the reed kind, invented by Joseph Christoph Denner, Nürnberg, 1690. Its tone is produced by a thin piece of Spanish reed nicely flattened, and tied, or otherwise fixed on the mouthpiece. On the body of the instrument are holes and keys for the fingers of the performer, by which the notes are produced. In extent, fulness, and variety of

tone, the clarinet is the most perfect of wind-instruments. Its construction, however, does not admit of every key in music being played on the same instrument, for which reason clarinets of different pitch are used in orchestral music—viz., the C clarinet, which plays all the notes as they are written; the B flat clarinet, a whole tone below the C; and the A clarinet, a minor third below the C. In military music, an E flat clarinet, a minor third above the C one, is much used.

CLARK, *klârk*, ABRAHAM: 1726, Feb. 15—1794, Sep. 15; b. Elizabethtown, N. J.: a signer of the Declaration of Independence. He was high sheriff of Essex co., 'poor man's counselor,' and a person of great influence in N. J.; member of the continental congress 1776-78, 1780-83, and 1788, of the N. J. legislature 1782-87, of the convention which framed the Federal constitution 1787, and of the U. S. congress from 1791. He died of sunstroke at Rahway, N. J., where a monument was erected to his memory 1848.

CLARK, ALONZO, M.D.: 1807, Mar. 1—1887, Sep. 13; b. Vt. He graduated at Williams College 1828, and at the New York College of Physicians and Surgeons 1835, where (after holding a chair for a time in the Vt. Medical College) he was prof. of physiology and pathology, 1848-55, and of pathology and practical medicine from 1855, as well as dean and pres. of the faculty from 1875. He held a high place in professional and public esteem, and was long connected, as visiting or consulting physician, with Bellevue, St. Luke's and Roosevelt hospitals. He was pres. of the State Med. Assoc. 1853, and wrote much for professional journals.

CLARK, ALONZO HOWARD, American scientist: b. Boston, 1850, April 13. He left his studies at Wesleyan University to enter the service of the United States Fish Commission, making a thorough study of the work. He has written: *History of Fishery Industries of the United States; Whales and Sea Fisheries; History of the Mackerel Fisheries; Food Industries of the World.* Since 1881 he has been connected with the Smithsonian Institution.

CLARK, ALVAN: 1804, Mar. 8—1887, Aug. 19; b. Ashfield, Mass: optician. After some years spent as an engraver for calico print works at Lowell and elsewhere he opened a studio in Boston, 1835, and painted portraits of Webster and many others. He began, 1846, to make telescopes, and, aided by his sons, succeeded in producing the best in the world. He was the first American to overcome the difficulties of the achromatic lens. The firm would not seek orders, issue a price-list, nor exhibit their wares; yet four times they received and executed an order for the greatest refracting telescope then known. The first, with an 18-inch object-glass, was ordered by the University of Mississippi, 1860, but went to Chicago. The second, 26-in., was begun 1870 for the Naval observatory at Washington; the third, 30-in., for the Pulkova observatory,

Russia, 1879. The fourth, 36-in., for the Lick observatory in California, was made 1886-87, and cost $50,000 unmounted. Mr. Clark received an honorary A.M. from four colleges. When Dom Pedro, of Brazil, was in America, 1876, he said there were three persons in Cambridge he wished to see—Longfellow, Agassiz, and Alvan Clark. Clark died at Cambridge.

CLARK, ALVAN GRAHAM: optician and astronomer; b. Fall River, Mass., 1832, July 10; son of Alvan Clark, the optician, with whom he was early associated in business. He made the great telescope lenses at Washington, Chicago, St. Petersburg, and for the Lick observatory; made the Denver 20-in. objective, and the great 40-in. lens for Chicago Univ.; became noted as the discoverer of double stars, also the first star within the trapezium of Orion, etc.

CLARK, Sir ANDREW, Scotch physician: b. Aberdeen, 1826, Oct. 28, d. London, 1893, Nov. 6. He was educated at Aberdeen and Edinburgh. After an unusually brilliant career as a student of medicine at Edinburgh, he assisted Dr. Hughes Bennett and Dr. Robert Knox, the anatomist, and next had charge for four years of the pathological department at the Haslar Naval Hospital. After graduating at Aberdeen in 1854, he settled in London. He will live in remembrance as the 'beloved physician' of George Eliot.

CLARK, ANSON LUMAN, American eclectic physician and surgeon; b. Clarksburg, Mass., 1836, Oct. 12. In 1858 he graduated as B. A. in Lombard University, and as A. M. in 1868 in medicine, at the Eclectic Medical Institute of Cincinnati, Ohio, in 1861. He served during the Civil War as assistant surgeon, and was a member of the House of Representatives of the 27th General Assembly of Illinois. Since 1868 he has filled the chair of Diseases of Women and Obstetrics in the Bennett Medical College of Chicago, Ill. He wrote *Clark's Diseases of Women* (1878).

CLARK, CHAMP, American politican: b. Anderson County, Ky., 1850, March 7. He was graduated at Bethany College and Cincinnati Law School, and in 1873-4, was president of Marshall College, W. Va. He has attained distinction as a Democratic campaign speaker, and since 1893 has been, with an intermission of one term, a member of Congress from Missouri.

CLARK, CHARLES DICKSON, American jurist: b. Laurel Cove, Tenn., 1847, Oct. 7. He was graduated at Cumberland University in 1875, and practised as a lawyer in his native State until 1895, when he was appointed judge of the United States court for the eastern and middle districts of Tennessee.

CLARK, CHARLES EDGAR, American naval officer: b. Bradford, Vt., 1843, Aug. 10. He entered the naval service in 1860; took part in the battle of Mobile Bay and in the bombardment of Fort Morgan; and was promoted captain in 1896. In 1898, March, he took command of the

battleship Oregon at the Mare Island navy yard, San Francisco, and when war with Spain was deemed inevitable, received orders to proceed to Key West, Fla., with all haste. After a voyage of over 14,000 miles, he joined the American fleet in Cuban waters on May 26 and on July 3 commanded his ship at the battle of Santiago. In 1899, March, he was assigned to duty at the League Island navy yard; was promoted rear-admiral 1902, June 16, and retired 1905, Aug. 9.

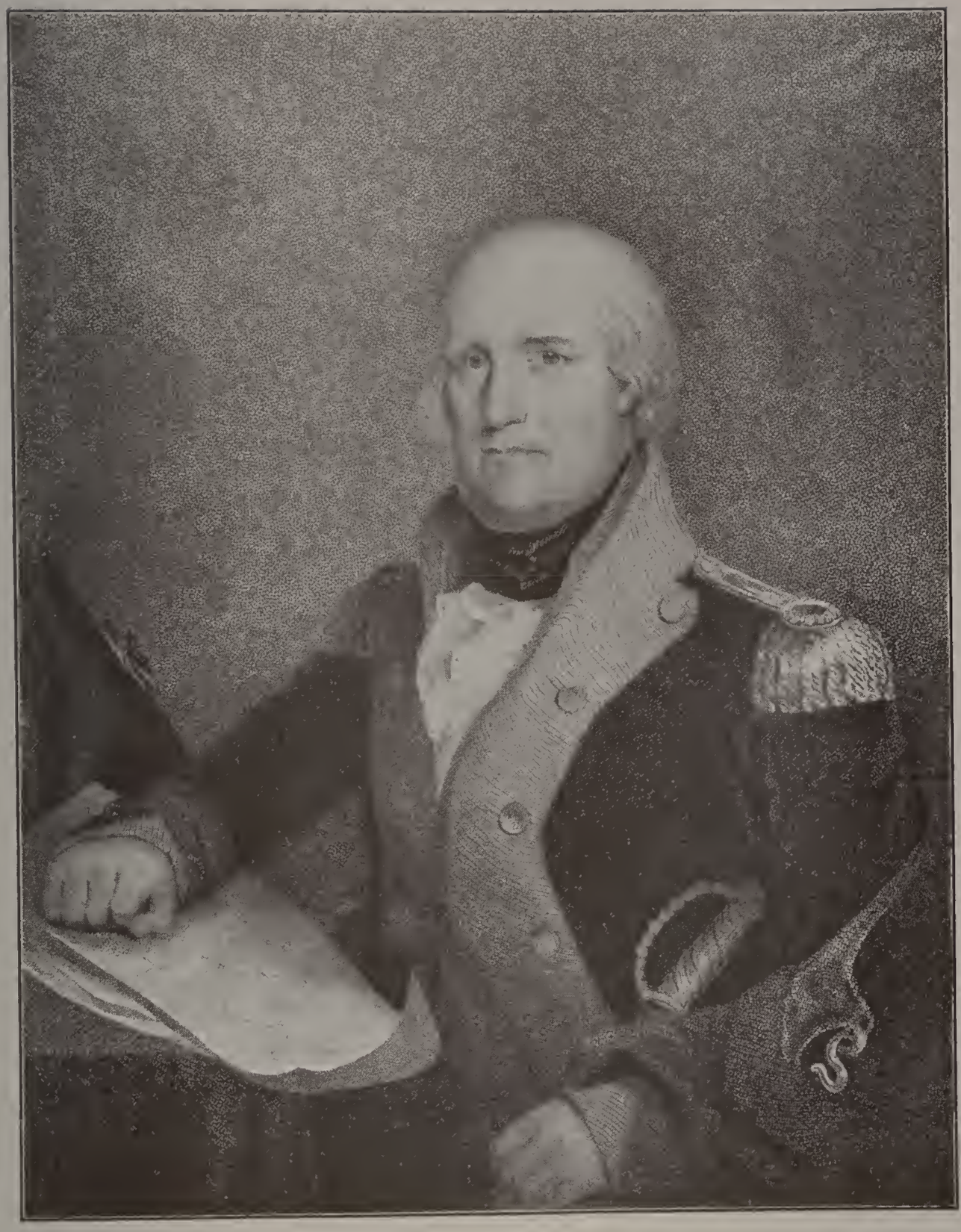
CLARK, Charles Heber, ('Max Adeler'), American journalist: b. Berlin, Md., 1841, July 11. He is the editor of the 'Textile Record.' in Philadelphia, and has written much on economic themes, but is best known to the general public as a humorist under the pseudonym Max Adeler. He has published: *Out of the Hurly Burly*; *Elbow Room*; *The Fortunate Island; Capt. Bluitt* (1902); *In Happy Hollow*; *The Quakeress* (1905); etc.

CLARK, Daniel, Canadian pathologist: b. Granton, Scotland, 1836, Aug. 29. He went to Canada when a child; was graduated at Victoria University in 1858; and practiced medicine in Ontario with great success. He has paid especial attention to mental diseases and the care of the insane. Since 1875 he has been at the head of the Provincial Asylum for the Insane at Toronto, and was later made professor of psychology and mental diseases in Toronto University. He was also twice elected president of the College of Physicians and Surgeons of Ontario. He has written *Pen Photographs* (1873); *Josiah Garth*, a novel.

CLARK, Edson Lyman, American Congregational clergyman: b. Easthampton, Mass., 1827, April 1. He was graduated from Yale in 1853, and from Union Theological Seminary in 1858, and has filled several Congregational pastorates in New England. He has published: *The Arabs and the Turks; The Races of European Turkey; Fundamental Questions, Chiefly Relating to the Early Hebrew Scriptures.*

CLARK, Edward, American architect: b. Philadelphia 1822; d. Washington, D. C., 1902, Jan. 6. He studied architecture under Thomas W. Walter, and after serving as assistant, was made chief architect of the United States capitol in 1864, serving continuously till his death. He was a member of the leading architectural commissions of the national government, including that for the completion of the Washington monument.

CLARK, Edwin Charles, English jurist: b. Yorkshire, England, 1835, Nov. 5. He was educated at Shrewsbury School and Trinity College, Cambridge, where he became scholar and Fellow. He practised for a short time as a conveyancer in London, being called to the bar at Lincoln's Inn 1860. In 1873 he was appointed regius professor of civil law at Cambridge, where he is also a professional fellow of St. John's College. His books are: *Early Roman Law: Regal Period* (1872); *Analysis of Criminal Liability*



GEORGE ROGERS CLARK.

(1880); *Practical Jurisprudence: a Comment on Austin* (1883); *Cambridge Legal Studies* (1888).

CLARK, Francis Edward, American clergyman: b. Aylmer, Quebec, 1851, Sept. 12. He was graduated from Dartmouth College in 1873, and continued his studies at Andover Theological Seminary. He became pastor of a Congregational church at Portland, Maine, and there organized the first Young People's Society of Christian Endeavor 1881, Feb. 2. He was pastor of the Phillips Congregational Church in South Boston, Mass., 1883-7, and in 1887 was made president of the United Society of Christian Endeavor and also became editor of the *Golden Rule*, the official organ of the society. He has written *Our Vacations* (1874); *Life of William E. Harwood* (1877); *Our Business Boys* (1883); *Looking Out on Life* (1883); *Danger Signals* (1884); *Young People's Prayer Meetings* (1887); *Ways and Means* (1890); *Christian Endeavor Saints* (1890); *Our Journey Around the World* (1894); *The Mossback Correspondence; Fellow Travelers* (1895); *The Great Secret* (1895); *A New Way Around the World* (1900); *Training the Church of the Future* (1902); *Christian Endeavor Manual* (1903); and has also edited numerous works.

CLARK, Frederick Thickstun, American novelist: b. Pennsylvania 1858. He has published: *A Mexican Girl; In the Valley of Havilah; On Cloud Mountain; The Mistress of the Ranch.*

CLARK, George Hunt, American poet: b. Northampton, Mass., 1809; d. Hartford, Conn., 1881, Aug. 20. He was a frequent contributor to *Putnam's, Knickerbocker*, and other journals. His published poems include *Now and Then*; *The News*; and a collection of humorous and sentimental pieces, entitled *Undertow of a Trade-Wind Surf.*

CLARK, George Rogers, American pioneer: b. Monticello, Va., 1752, Nov. 19. d. near Louisville, Ky., 1818, Feb. 18. He studied surveying, and at 20 settled in Ohio, serving in the Indian wars of that time and region. He removed to Kentucky in 1775, procuring the organization of that Territory. On the outbreak of the Revolutionary war he led the patriot army on the frontier, campaigning vigorously against the British throughout Illinois, Ohio, and Kentucky. His success in this saved much territory to the colonies in the final treaty of peace with Great Britain. He subsequently supported the cause of the French of the Mississippi valley against the Spaniards. He fell into penury in his latter years, and died in neglect. See Clark, William (1770-1838).

CLARK, Henry James, American naturalist and prose-writer: b. Easton, Mass., 1826, June 22; d. Amherst, Mass., 1873, July 1. He was associated in work with Agassiz for several years; and was professor in several leading colleges and universities. Among his many contributions to liter-

ature are *Mind in Nature, or the Origin of Life* (1863); *Mode of Development of Animals* (1865); *Claims for Scientific Property.*

CLARK, Imogen, American novelist: b. New York. She has published: *Will Shakespeare's Little Lad* (1897); *The Victory of Ezry Gardner* (1897); *The Heresy of Parson Medlicott* (1900); *God's Puppets* (1901).

CLARK, J. Scott, American educator: b. Copenhagen, N. Y., 1854, Sept. 23. He was graduated from Syracuse University in 1877, was professor of rhetoric there, 1882-92, and has been professor of English in Northwestern University, Evanston, Ill., from 1892. He has published: *A Practical Rhetoric* (1886); *The Art of Reading Aloud* (1892); *A Study of English Prose-Writers* (1898); *A Study of English and American Poets* (1900); etc.

CLARK, Sir James, Scottish physician: b. Findlater, Banffshire, 1788, Dec. 14; d. Bagshot Park 1870. June 29. He studied medicine at the University of Edinburgh, and entered the navy as assistant-surgeon in 1809, and continued in the service till 1815, when he returned to Edinburgh. After devoting some time to foreign travel, he settled in Rome, where he continued to practise from 1818 to 1826. He returned to England in 1826, and became physician to the Duchess of Kent in 1835, and on the accession of Queen Victoria was appointed first physician in ordinary to the queen, and shortly afterward made a baronet. He retired from practice several years before his death, but continued till near the close of his life to act as consulting physician to the royal family.

Soon after his return to England Sir James Clark published, as a result of his continental observations, a work *On the Sanative Influence of Climate* (1829), and in 1835 a *Treatise on Pulmonary Consumption and Scrofula.*

CLARK, James Gowdy, American balladist: b. Constantia, N. Y., 1830, June 28; d. Pasadena, Cal., 1897, September. He was well known as a concert singer and song writer, and among his most popular songs are: *Star of My Soul; The Awakening; The Beautiful Hills; The Children of the Battlefield; Freedom's Battle Hymn; The Evergreen Mountains of Life; and The Old Mountain Tree.*

CLARK, John Bates, American economist: b. Providence, R. I., 1847, Jan. 26. He was graduated at Amherst in 1872, and has been prominent as a political economist since the publication of his *Philosophy of Wealth*; *Wages*; *Capital and Its Earnings*; and *The Distribution of Wealth.* In 1895 he became professor of political economy at Columbia University.

CLARK, John Emory, American scientist: b. Northampton, N. Y., 1832, Aug. 8. He was graduated at the University of Michigan in 1856, and studied at Heidelberg. After serving in the Civil War as captain and colonel, he became professor of astronomy at Antioch College. From 1873-1901 he was professor of mathematics at the Shef-

field Scientific School of Yale University, and since 1901 has been professor emeritus.

CLARK, John Willis, English writer, registrar of the University of Cambridge from 1891. He is the author of *Cambridge* (1880); *Architectural History of the University and Colleges of Cambridge* (1882); *Libraries in the Mediæval and Renaissance Periods* (1894); *Augustinian Priory Observances* (1897); *Old Friends at Cambridge and Elsewhere* (1900); *The Care of Books* (1901).

CLARK, Jonas Gilman, American philanthropist: b. Hubbardston, Mass., 1815, Feb. 1; d. Worcester, Mass., 1900, May 23. He began life as a carriage maker and acquired a fortune in business and real estate investments. He is noted as the founder of Clark University (q.v.), at Worcester, Mass., which he endowed with $2,000,000 in 1887. He also conferred gifts on his native town. He bequeathed $200,000 to Clark University outright and $1,000,000 and the residue of his estate conditionally.

CLARK, Joseph, English painter: b. Cerne Abbas, Dorsetshire, 1834, July 4. He was educated by the 'Dorset Poet,' William Barnes (q.v.), went to London at 18 and became a student at the Royal Academy. He first exhibited at the Royal Academy in 1857, and has exhibited there nearly every year since. Among well-known pictures by him are: *The Return of the Runaway; Hagar and Ishmael; Three Little Kittens.*

CLARK, Lewis Gaylord, American journalist and humorous writer: b. Otisco, N. Y., 1810, March 5; d. Piermont, 1873, Nov. 3. In 1834 he became editor of the *Knickerbocker Magazine* and with Irving, Bryant, Longfellow, Halleck, and Willis, as contributors, made it the foremost literary publication of that time, and an inspiration to a higher standard of periodical literature. The *Editor's Table*, written by him, overflowed with amusing stories and witty sayings. The *Knickerbocker Sketch-Book* (1850), and *Knick-Knacks from an Editor's Table* (1853), are his only publications in book form.

CLARK, Theodore Minot, American architect: b. Boston, Mass., 1845, Aug. 20. He was graduated from Harvard in 1866, and has been professor of architecture in the Massachusetts Institute of Technology in Boston for many years. He has published *Building Superintendence; Owner and Builder Before the Law; Rural School Architecture*, etc.

CLARK, Thomas March, American Protestant Episcopal bishop: b. Newburyport, Mass., 1812, July 4; d. 1903, Sept. 7. He was graduated at Yale in 1831, and four years later entered the Presbyterian ministry, but in 1836 took orders in the Episcopal Church. He was successively rector of Grace Church, Boston, 1836–43; St. Andrew's, Philadelphia, 1844–7; Trinity Church, Boston, 1847–51; and Christ Church, Hartford, Conn., 1851–4. In the year last named he was consecrated Bishop of Rhode

Island. From 1899–1903 he was the presiding bishop of the Episcopal Church. He has written: *Formation of Character; The Efficient Sunday-school Teacher; The Dew of Youth; Early Discipline and Culture; Reminiscences* (1895).

CLARK, Walter, American jurist: b. Halifax, N. C., 1846, Aug. 19. He was graduated at the University of North Carolina in 1864; became a lawyer in 1868, judge of the superior court in 1885, of the supreme court in 1889–1903 and since 1905, Jan. 1, chief justice. He is a contributor to leading magazines on current topics and a law writer of authority, his best known work being *Overruled Cases* (1884). Other works by him are *Annotated Code of Civil Procedure; Laws for Business Men,* etc.

CLARK, William, American explorer; brother of George Rogers Clark (q.v.): b. Virginia, 1770, Aug. 1; d. St. Louis, Mo., 1838, Sept. 1. He emigrated with his family at the age of 14 to the falls of the Ohio, in Kentucky, on the present site of Louisville. In 1808 he was appointed in conjunction with Capt. Meriwether Lewis to the command of an expedition designed to explore the northwest territory lying between the Mississippi and the Pacific Ocean. He acquitted himself with consummate ability in this hazardous employment, which required the combination of military and scientific skill. His journal and the account kept by him of the astronomical observations made by him and Capt. Lewis have been published. He was appointed in 1813 governor of the Northwest Territory and superintendent of Indian affairs, which offices he retained till 1820, when Missouri was created a state. Two years afterward he was again appointed commissioner and superintendent of Indian affairs.

CLARK, William, American thread manufacturer: b. Paisley, Scotland, 1841; d. Portland, England, 1902, July 7. Entering the Scottish thread mills established by his family, he made himself conversant with all details of the business and in 1860 came to the United States. Here he joined his brother, George A. Clark, who had preceded him by four years, and established at Newark, N. J., a small branch of the Scottish business. From this was built up in time the great Clark thread mills of Newark. After the death of George Clark, in 1873, the business was solely managed by his brother William. At the latter's death he left bequests of $10,000 to each of three Newark benevolent institutions, $6,000 to a fourth, and $10,000 to Rutgers College.

CLARK, William: b. at Invernrie, Scotland, 1829; graduated from University of Aberdeen 1848 and from Oxford 1866. Was ordained as priest in the Church of England and served in several charges before coming to Canada in 1882; appointed professor of mental and moral philosophy, Trinity University, Toronto, which post he still retains (1907); served as a member of the educational

council of Ontario; editor of *The Canadian Churchman;* contributed to many publications as fellow and president of the Royal Society of Canada. His chief works have been: *The Redeemer, A Series of Sermons* (1863); *The Comforter: Sermons on the Holy Ghost* (1864); *The Sin of Man and the Love of God* (1870); *The Four Temperaments and Occasional Sermons* (1874); *Hefele's History of the Councils* (translated and edited, 1886); *Witnesses to Christ* (1888); *Savonarola: His Life and Times* (1892); *Hagenbach's History of Christian Doctrine* (Translated and edited 1892); *The Paraclete: A Series of Discourses* (1900); *Pascal* (1904).

CLARK, William Andrews, American politician: b. near Connellsville, Pa., 1839, Jan. 8, of Protestant Irish farmer stock. His preparation for college was interrupted by the removal of his family to Iowa, where he attended an academy at Birmingham and studied law two years, but never practiced. He taught school in Missouri 1859–60; was a miner in Colorado 1862–3; and in 1863 migrated to Idaho, where he set up in trade, and was soon one of the chief merchants in the Territory. In 1867 he contracted for a Star Route in Montana; and in 1868 formed a copartnership for a mercantile and banking business there. To qualify for the mining business, he took a complete course at Columbia School of Mines 1872–3. Since then he has been identified with mining interests in every mining region of the West, and has for many years been the largest individual metal producer of the world, besides having interests in manufacturing, railroading, mercantile business, etc. He was State orator to represent Montana at the Philadelphia Centennial of 1876, and a commissioner of the New Orleans Exposition of 1884; was Masonic Grand Master of Montana in 1877; in 1878 was major in the Nez Perce war against Chief Joseph; and was president of the constitutional convention when Montana was admitted to the Union. In 1898 he was elected to the Senate from Montana, but a protest was filed and an investigation ordered; before a report was made he resigned, returned to Montana, and was re-elected for the term 1901–7. He was placed on many of the most important senatorial committees, including that on foreign relations.

CLARK, William Bullock, American scientist; b. Brattleboro, Vt., 1860, Dec. 15. He was graduated at Amherst College in 1884. After a course of European study he became instructor in geology at Johns Hopkins University in 1887, and since 1894 has been professor of geology there. In 1891 he was appointed director of the Maryland Weather Service.

CLARK, William George, English scholar: b. 1821, March; d. York, 1878, Nov. 6. He was educated at Trinity College, Cambridge, took orders in the Established Church but gave up his orders in 1869, explaining his reasons therefor in a pamphlet *The Present Dangers of the Church of England* (1870). He assisted in founding the

*Journal of Philology* in 1868, but is best known for his editorship with William Aldis Wright (q.v.) of the noted *Cambridge Shakespeare* (1863-6). The *Globe Shakespeare* (1864) was also edited by Clark and Wright. Clark published also *Lectures on the Middle Ages and the Revival of Learning* as well as lesser works.

CLARK, Willis Gaylord, American poet, twin brother of Lewis Gaylord Clark (q.v.): b. Otisco, N. Y., 1810, March 5; d. Philadelphia, Pa., 1841, June 12. He became associate editor of the Columbian Star, a religious weekly paper (1830), but resigned shortly after to take charge of the Philadelphia *Gazette*. His longest poem is *The Spirit of Life* (1833). A complete edition of his poems, edited by his brother, appeared in 1847.

CLARKE, *klârk*, Adam, ll.d.: abt. 1762-1832, Aug. 26; b. in the north of Ireland: biblical commentator, in the Wesleyan Methodist connection. He studied at Kingswood, near Bristol, and at the age of 20 became a preacher or evangelist, in which capacity he did great and good work. Although the office of a Wesleyan pastor is not favorable for the development of scholarly habits, C. contrived to find time for extensive study. His first work was a *Bibliographical Dictionary* (1802). His attainments in oriental literature and biblical knowledge procured for him the degree of ll.d. from St. Andrews Univ. The board of commissioners on the public records selected him to edit Rymer's *Fœdera*. He also edited and abridged several other works, but the great work of his life was his edition of the Holy Scriptures in English, illustrated with a commentary and critical notes, into which were compressed all the results of his singularly extensive and varied reading. The first vol. appeared 1810, the eighth and last 1826.

CLARKE, Annie, American actress: b. Boston, Mass., 1845; d. Chicago, 1902, May 22. Her first appearance was at the Boston Museum in 1853 as the Duke of York in Richard III. For several years she acted in juvenile parts in various places, but from 1861 till 1892 was a member of the stock company at the Boston Museum, soon becoming the leading actress there. She was a general favorite, but until 1892 was seldom seen outside of Boston. After that date she played in Chicago and other cities.

CLARKE, Augustus Peck, American physician: b. Pawtucket, R. I., 1833, Sep. 24. He was graduated at Brown University in 1861, and at the Harvard Medical School in 1863. He was an army surgeon during part of the Civil War, and subsequently entered private practice. He has been sent to every International Medical Congress since 1887, and from 1894–1901 was dean of the College of Physicians and Surgeons in Boston. He has attained special eminence in the domain of obstetrics and gynecology.

CLARKE, Benjamin Franklin, American educator: b. Newport, Maine, 1831, July 14. He was graduated

at Brown University in 1863, and subsequently became professor of mechanical engineering there. In 1898–9 he was acting president of the university.

CLARKE, Sir Caspar Purdon: English archæologist and art critic; b. 1846. While a student of art and architect he became interested in archæology, and was appointed keeper of art collections and asst.-director, later becoming director of the celebrated Art Museum, South Kensington, London. In this capacity he travelled extensively, seeking and gathering art treasures in the most out-of-the-way places throughout the world, and achieved an enviable reputation as a universal art expert. In 1883 he was made a companion of the order of the Indian Empire, and created a knight in 1902. In 1905 he accepted the appointment of director of the Metropolitan Museum of Art, New York City.

CLARKE, Creston, American actor: b. Philadelphia 1865, Aug. 20. He is a son of John Sleeper Clarke (q.v.), and was educated at academies in Paris and London with a view to the stage, and made his debut in London 1882. He has attained success in tragic rôles, and has written *The Last of His Race* and other plays.

CLARKE, Edith Emily, American librarian: b. Syracuse, N. Y., 1859, Nov. 5. She was graduated at Syracuse University in 1881, and after teaching school some years, took up library work. Having served as cataloguer at Columbia University Library and at the Newberry Library in Chicago, she became chief cataloguer of public documents for the National Government in 1895, and librarian of the University of Vermont in 1898.

CLARKE, Edward Daniel: 1769–1822, Mar. 9; b. Willingdon, Sussex, England: traveller. He studied at Cambridge, and 1790–99 was tutor and travelling companion in several noblemen's families, and made the tour of Great Britain, France, Italy, Switzerland, and Germany and on one tour, 1799–1802, traversed Denmark, Norway, Sweden, Lapland, Finland, Russia, the country of the Don-Cossacks, Tartary, Asia Minor, Syria, Egypt, and Greece. His donations to the Univ. of Cambridge were recognized by bestowal of the degree ll.d. In 1807, he began a course of lectures on mineralogy, and the university established a professorship of that science in his favor. He presented to the library of Cambridge valuable marbles collected during his travels; among them the colossal statue of the Eleusinian Ceres, on which he wrote a treatise 1803. England is also indebted to him for the famous sarcophagus with the inscription in three languages. On this he wrote a treatise: *The Tomb of Alexander, a Dissertation on the Sarcophagus brought from Alexandria, and now in the British Museum* (Lond. 1805). His *Travels* (first vol. 1810, fifth 1819) were received with extraordinary favor. An additional vol., containing his *Travels through Denmark, Sweden, Lapland, Norway, Finland,*

*and Russia,* was published after his death (Lond. 1823). A complete edition of his travels appeared in 11 vols. (Lond. 1819–24). The Univ. of Cambridge purchased his Greek and Oriental manuscripts, among which is the famous Codex of Plato, which Clarke discovered in the island of Patmos.

CLARKE, Sir Edward George, English legal writer: b. London, 1841, Feb. 15. He was admitted a barrister of London Inn in 1864, and was solicitor-general 1886–92. He sat in the House of Commons for Southwark in 1880, and for Plymouth 1880–1900. He has published *Treatise on the Law of Extradition* (1866, 3d ed. 1888); three collections of *Public Speeches;* etc.

CLARKE, Frank Wigglesworth, American chemist: b. Boston, Mass., 1847, March 19. He was graduated from the Scientific School of Harvard University in 1867, was instructor at Cornell 1869, professor in Howard University 1873–4, and professor of chemistry and physics, University of Cincinnnti 1874–83. He has been chief chemist of United States Geological Survey and honorary curator of minerals, United States National Museum, since 1883. He is a member of many American and foreign scientific societies, and was a member of the International Jury of Awards at the Paris Exposition of 1900, and received from the French government the decoration of the Legion of Honor. He has published: *Weights, Measures and Money of All Nations; Elements of Chemistry; A Report on the Teaching of Chemistry and Physics in the United States,* the Smithsonian *Constants of Nature,* and various official bulletins. He is also author of more than a hundred scientific essays and memoirs published in magazines and scientific journals. His most important contributions to science have been his *Revaluation of Atomic Weights,* and his investigations upon the constitution of the natural silicates. He is joint author with L. M. Dennis of two recent works, *Elementary Chemistry* and *A Laboratory Manual.*

CLARKE, Sir George Sydenham, English soldier and colonial governor: b. Lincolnshire 1848, July 4. After being educated at Haileybury College he entered the Royal Engineers' service and served in the Egyptian expedition in 1882, in the Sudan expedition 1885, at Suakin and elsewhere, and was knighted in 1893. From 1901–4 he was governor of Victoria, Australia. He has published: *Practical Geometry and Engineering Drawing; The Principles of Graphic Statics; Plevna; Fortification: Past, Present, and Future; The Last Great Naval War; The Navy and the Nation; Imperial Defense; Russia's Sea Power.*

CLARKE, Helen Archibald, American writer: b. Philadelphia. She graduated from the musical department of the University of Pennsylvania 1884; began writing literary articles for the magazines in 1887, and in 1889, with Charlotte Porter, founded *Poet Lore,* a journal devoted

to the study of literature, and to literary criticism, which has maintained a high degree of excellence under her editorship. She has devoted herself especially to the study of Browning, and has edited several editions of his works in part or as a whole, and written a score of interpretative articles on the man and his work. She has composed considerable piano music, and contributed frequently to the various musical journals. Her work has appeared in *Shakespeariana*, the *Browning Society Papers*, *Open Court*, *Popular Science Monthly*, *The Conservator*, *Philadelphia American*, *Music Review*, etc.

CLARKE, Henry Francis, U.S.A.: 1820, Nov. 9—1887, May 10; b. Brownsville, Fayette co., Penn. He graduated at West Point 1843, and served in Texas, Mexico, Fla., and as instructor at the military acad., till 1857, when he was made capt. and sent to Utah as commissary. He was major and chief commissary to the Army of the Potomac 1861–64, and took part in its chief battles; became lieut.col. 1864, and after the war was brevetted brig. and maj.gen. He was chief of commissariat of the div. of the Missouri 1868–75, and of the div. of the Atlantic 1879–84; commissioned col. 1882, and retired 1884, Nov. 9.

CLARKE, Hyde, English philologist: b. London 1815; d. there 1895, March 1. In diplomacy, civil engineering, and scholarship he was equally at home, his versalility being conspicuous in *Theory of Railway Investment; Colonization in our Indian Empire* (1857); *Comparative Philology* (1858), and *Examination of the Legend of Atlantis* (1886); *Early History of the Mediterranean Populations;* etc. He also compiled a useful abridged English Dictionary.

CLARKE, James Freeman, D.D.: 1810, Apr. 4—1888, June 8; b. Hanover, N. H.: Unit. clergyman. He graduated at Harvard Univ. when 19 years old, and at the Cambridge Divinity School when 23, and entered at once upon the ministry of the Unit. Church at Louisville, Ky. He remained there till 1840, in the meantime editing the *Western Messenger* three years and translating De Wette's *Theodore*. In 1841 he received a call to the Church of the Disciples, Boston, and in that pastorate he spent the remainder of his working life excepting an interval 1850–53. The form of worship in his church combined the congregational responses of the Prot. Episc. service, the extemporaneous prayers of the Congl. churches, and the silent ones of the Soc. of Friends. He was prof. of natural religion and Christian doctrine in Harvard Univ. 1867–71, lecturer on ethnic religions 1876–77, and for many years one of its overseers; trustee of the Boston public library, and member of the state board of education. His published works are very numerous and include historical and classical as well as religious themes. He assisted Ralph Waldo Emerson and William H. Channing in preparing *Memoirs of Margaret Fuller d'*

*Ossoli* (Boston, 1852), and published *History of the Campaign of* 1812, *and Defense of General William Hull for the Surrender of Detroit* (New York, 1848); *Christian Doctrine of Forgiveness of Sin* (1852); *Christian Doctrine of Prayer* (1854); *Orthodoxy; its Truths and Errors* (1866); *Steps of Belief, or Rational Christianity maintained against Atheism, Free Religion, and Romanism* (1870); *Ten Great Religions* (1871–83); *Common Sense in Religion* (1879); *Exotics: Attempts to Domesticate Them* (1876); *Essentials and Non-essentials in Religion* (1878); *Memorial and Biographical Sketches* (1878); *Events and Epochs in Religious History* (1881); *Anti-Slavery Days in New York* (1884); *Manual of Unitarian Belief* (1884); *Every-Day Religion* (1886); and *Vexed Questions* (1886).

CLARKE, John: 1609 Oct. 8—1676, Apr. 20; b. Suffolk, England: a founder of Newport and Rhode Island. At first a physician, he emigrated to Boston 1637, but found no rest there, for he sympathized with Mrs. Hutchinson and Roger Williams. With Coddington and others he purchased Aquidneck from the Indians, 1638, Mar. 24, and there at Pocasset became pastor of the second Baptist church founded in America; it was soon transferred from the n. end of the island to the s., at Newport. When the settlements were united, 1647, C. is believed to have framed the first code. Visiting Lynn, Mass., he was arrested and regretted that some one paid his fine and saved him a whipping. He went to England 1651 to obtain relief for the colony, published 1652 *Ill News from New England, or a Narrative of New England's Persecution*, and remained till he secured from Charles II., 1663, an extremely liberal charter. Returning, he resumed his charge, was sent to the R. I. assembly 1664–69, was deputy gov. 1669 and 1671, and was commissioned to revise the laws of the colony. He died at Newport, leaving his farm for charitable uses, to which it still yields a small income. Bancroft calls C. 'modest and virtuous, persevering and disinterested.' Others, slighting Roger Williams, have styled him 'Father of R. I.,' and more plausibly 'Father of American Baptists.'

CLARKE, John Mason, American scientist: b. Canandaigua, N. Y., 1857, April 15. He studied at Amherst and Göttingen and from 1881 to 1884 was professor of geology at Smith College. He subsequently became State palæontologist of New York, and has written numerous pamphlets and papers on geology and palæontology.

CLARKE, John Sleeper, American actor: b. Baltimore, Md., 1833, Sept. 3: d. London, Eng., 1899, Sept. 14. He began his stage career in childhood and played comedy parts with success from 1851 to 1869. He then became a theatrical manager and with his brother-in-law, Edwin Booth, made paying ventures in various houses of amusement in the United States and England.

CLARKE, Joseph Ignatius Constantine, American journalist and playwright: b. Kingstown, Ireland, 1846,

July 31. He emigrated to the United States in 1868, and was on the editorial staff of the New York *Herald* 1870–83; edited New York *Journal* 1883–95; and the *Criterion* 1898–1900. His plays include: *Heartsease; For Bonnie Prince Charlie; The First Violin; Her Majesty;* and he has also published *Robert Emmet*, a tragedy in blank verse (1888); *Malmorda, a Metrical Romance* (1893).

CLARKE, McDonald, American poet: b. Bath, Maine, 1798, June 18; d. New York 1842, March 5. He was an eccentric character, familiarly known as 'the mad poet'; and was the subject of an amusing poem by Halleck, called *The Discarded.* The subjects of Clarke's verses were usually the belles of the city and topics of the day. His works include: *Poetic Sketches* (1826); and *The Belles of Broadway* (1833). One of his poems was *Now Twilight Lets Her Curtain Down.*

CLARKE, Marcus Andrew Hyslop, Australian novelist: b. London, 1846, April 24; d. Melbourne, Australia, 1881, Aug. 2. He went to the island in his 24th year, took up journalism and acquired the experience of bush life and the knowledge of antipodean men and things of which such brilliant use is made in *His Natural Life*, a striking convict story; *Holiday Peak; Old Tales of a New Country*, and other vivid fictions.

CLARKE, Mary Bayard, American author: b. Raleigh, N. C., about 1830. While living in Cuba, she published verses signed 'Tenella' in the peridoicals. After her return in 1855 she wrote *Reminiscences of Cuba* for the *Southern Literary Messenger.* Among her works are war lyrics and translations from Victor Hugo; also prose articles signed 'Stuart Leigh'. In 1870 was published her poem, *Clytie and Zenobia, or the Lily and the Palm*, and *Wood Notes*, a compilation of North Carolina verse.

CLARKE, Mary Victoria Novello Cowden, English story-writer, essayist, and Shakespearean scholar: b. London, 1809, June 22; d. Genoa, Italy, 1898, Jan. 12. She married in 1828 Charles Cowden Clarke, with whom she wrote the *Shakespeare Key* and compiled an edition of Shakespeare's plays. Her best known work is her *Concordance to Shakespeare*, published in 1845, which cost 16 years labor. Other works from her pen are: *The Girlhood of Shakespeare's Heroines* (1850); *World-noted Women* (1857); *The Trust and Remittance* (1873); *A Rambling Story* (1874).

CLARKE, Rebecca Sophia ('Sophie May'), American novelist and writer of children's stories: b. Norridgewock, Maine, 1833, Feb. 22; d. 1906, Aug. 16. She wrote *The Dotty Dimple, Flaxie Frizzle* stories, etc., for children; and the novels, *Her Friend's Lover; The Asbury Twins; Quinnebasset Girls*, etc.

CLARKE, Richard Henry, American author· b. Washington, D. C., 1827, July 3. He became president of the Society of American Authors in 1891. He has written *The New Crusade of the Nineteenth Century* re-

lating to the Church and slavery; *Socialism in America; Biography of Commodore John Barry, Founder of the American Navy; Father Sebastian Rale,* an answer to Gladstone on *Maryland Toleration;* an *Illustrated History of the Catholic Church in the United States; Lives of the American Catholic Bishops;* and *Old and New Lights on Columbus.*

CLARKE, Dr. Samuel: 1675, Oct. 11—1729, May 17; b. Norwich, England: theologian. He was educated at Cambridge. The system of Descartes at that time held almost universal sway; but this failing to satisfy his mind, he adopted the views of his contemporary and friend Newton. With philosophy, he studied also theology and philology. He was some time chaplain to the Bp. of Norwich, a promoter of science; he afterward became chaplain to Queen Anne, and in 1709 rector of St. James's. By his work on the Trinity (1712), in which he denied that that doctrine was held by the early church, he brought himself into considerable trouble. The convocation of bishops, who wished to avoid controversy, contented themselves with an explanation not very satisfactory, and a promise from Clarke to be silent on that subject. His views inclined toward Arianism, but he was a vigorous antagonist of the freethinkers of his time; in opposition to Dodwell, he sought to demonstrate the immortality of the soul from the idea of an immaterial being. His most famous work is *Demonstration of the Being and Attributes of God* (Lond. 1705); connected with it in subject is his *Verity and Certitude of Natural and Revealed Religion* (Lond. 1705). At the instigation of the Princess of Wales, who was inclined to the doctrines of Leibnitz, Clarke entered into a keen correspondence with that philosopher on space and time, and their relations to God, on moral freedom, etc. This correspondence was published under the title of *Collection of Papers which passed Leibnitz and Clarke in the years* 1715 *and* 1716 (Lond. 1717). In his ethical disquisitions he seeks to find a foundation for moral obligation in a peculiar principle which he calls the *fitness of things*, or the relations of things established from eternity by God. He published a valuable edition of Cæsar (Lond. 1712); that of Homer (Lond. 1729–46) was completed by his son. A collected edition of his philosophical works appeared in 4 vols., Lond. 1738–42.

CLARKE, William Horatio, American organist: b. West Newton, Mass., 1840. He filled positions as organist in Dedham, Boston, and Woburn; was for some years superintendent of schools at Dayton, Ohio; was organist of Tremont Temple, Boston, Mass., 1878–87, when he retired to Reading, Mass., where he built the fine four-manual organ in Clarigold Hall. He has published: *New Method for Reed Organs* (1869); *Outline of the Structure of the Pipe Organ* (1877); *Anthems and Responses* (1879); *The Art of Transparent Water Coloring* (1902); *Short Service Preludes* (1903); *Valuable Organ Information* (1904); *Artistic Method for Reed Organs* (1905); etc.

CLARKE, William Newton, American Baptist clergyman: b. Cazenovia, N. Y., 1841, Dec. 2. He graduated at Colgate University 1861, and at Hamilton Theological Seminary 1863. He filled Baptist pastorates at Keene, N. H., Newton Centre, Mass., Montreal, and Hamilton, N. Y., 1863–90, and was a professor in Toronto Baptist College 1883–7. Since 1890 he has been professor of Christian theology at Colgate University, Hamilton, N. Y. He has written: *Commentary on Mark* (1881); *Outline of Theology* (1897); *What Shall We Think of Christianity*, (1899); *Can I Believe in God the Father* (1899); *A Study of Christian Missions* (1900); *The Use of the Scripture in Theology* (1905).

CLARKSBURG, W. Va., city and county seat of Harrison County, situated in the north central part of the state on the West Fork River, a branch of the Monongahela and on the Parkersburg branch of the Baltimore & Ohio Railroad, 22 miles west of Grafton. The Short Line, the Monongahela, and the West Virginia and Pittsburg divisions of the Baltimore & Ohio Railroad also enter the city. The city lies in a section abounding in natural resources, natural gas, coal, and oil being plentiful; and the farm, grazing, and timber lands very valuable. Clarksburg is called the 'Fuel City of the Fuel State.' The manufactures are many and varied, there being glass, art pottery, chair, and cigar factories, chemical and carbon works, wood-working plants, machine shops, foundries, bottling works, a brewery, and a grain elevator with a capacity of 80,000 bushels. There are five newspapers, daily and weekly combined. There are five banks in the city with a combined capital of $675,000, and doing an annual business of $90,000,000. Among the notable public institutions are the City, the Kesler, and the Harrison County hospitals. There is an excellent free school system with a public high school, supplemented by Broaddus Classical and Scientific Institute, Saint Joseph's Academy, and Elliot Commercial College. The city has nine church edifices. The city was first settled in 1772, became a borough in 1785, and was incorporated as a city in 1899. The city is proud of having been the birthplace of the famous 'Stonewall' Jackson. Its municipal affairs are administered by a mayor, recorder, chief of police, and a council of 10 members, one half of whom are elected each year. Pop. (1910) 9,201.

CLARKE'S FORK, or River: formed in Missoula co., Montana, lat. 47° 21′ n., long. 114° 38′ w., by the junction of the Flathead river from the n. with the Bitter Root from the s. It flows n.w., and with a fall of 15 ft. empties into the Columbia in Washington in lat. 48° 50′ n., long. 117° 45′ w. Pend d'Oreille Lake, 45 m. long and 15 m. wide, in n. Idaho, is an expansion of this river. Length including either tributary, about 650 m.—The Flathead rises in British Columbia, in the Rocky Mts.; the Bitter Root in s.w. Montana, in the Big Hole Mts., receiving the waters of the Hell Gate.

CLARKSON, *klârk'son*, THOMAS: philanthropist: 1760, Mar. 28—1846, Sep. 26; b. Wisbeach, Cambridgeshire, England; son of a clergyman, master of the free grammar school at Wisbeach. He studied at Cambridge Univ., and was led to become the promoter of the anti-slavery agitation in Great Britain by a Latin prize-essay which he wrote 1785, on the question, 'Is it right to make slaves of others against their will.' An English translation had an extensive circulation, and Clarkson resolved to devote his life to a crusade against African slavery. Associations were formed, and, besides visiting the principal towns of England, and going to Paris, in the cause, Clarkson published numerous essays, pamphlets, and reports on the subject. Mr. Wilberforce, M.P., whose co-operation Clarkson had secured, took the lead in the anti-slavery agitation, and in 1787 brought the subject before parliament. 1807, Mar. 25, the law for the suppression of the slave-trade passed the legislature, and Clarkson wrote a *History of the Rise, Progress, and Accomplishment of the Abolition of the African Slavetrade*, 2 vols, 8vo, 1808. On the formation of the Anti-slavery Soc. 1823, for the abolition of slavery in the W. Indies, Clarkson became one of its leading members, and saw its object attained 1833. He was active in other benevolent schemes, particularly in establishing institutions for seamen in seaport towns, similar to the sailors' homes. He was in deacon's orders in the Church of England, but showed great liking for the Society of Friends, though he never joined them.

CLARKSVILLE: city, co.-seat of Montgomery co., Tenn.; on the n. bank of the Cumberland river, and at the mouth of the Red river, 45 m. n.w. of Nashville, 199 m. from Memphis; on the Louisville and Nashville railroad. It was incorporated 1830, and partially destroyed by fire 1878. It is largely engaged in raising, manufacturing, and shipping tobacco. Rich deposits of iron ore are near. It has foundries, flour and planing mills, and manufactures of ploughs, wagons, carriages, and ice. Clarksville is the seat of the Southwestern Presb. Univ.; and has also a girls' acad. and several fine public buildings, banks, churches, schools, hotels, etc. It has 2 daily papers and 1 weekly, and a monthly issued by the university. Pop. (1910) 8,548.

CLARK UNIVERSITY: institution for advanced studies, without an undergraduate course; at Worcester, Mass.; founded by Jonas G. Clark. It has in view especially the training of specialist professors for colleges, and is indifferent to the number of its students, who thus far are few, select, and mature, compared with those of the older universities. The buildings are on high ground near the city, the campus containing eight acres. The main edifice, 204 by 114 ft., was begun 1887; a chemical laboratory, with 68 rooms, was erected 1888, in which year Prof. G. Stanley Hall, of Johns Hopkins Univ., accepted the presidency; and the institution was formally opened 1889, Oct. 2. Five depts. were organized: mathe-

matics, physics, chemistry, biology, and psychology—the plan being to strengthen these in every way before adding others. The work is in pure science, i.e., not applied. In 1899, pedagogy was made one of the sub-departments of psychology. One of the characteristic features in the design is that professors and students should meet on the same plane, the professors to be as older students, the students to lecture occasionally on special subjects. Original work is encouraged and demanded, and a number of scholarships have been founded so that worthy students of limited means might devote themselves to research along special lines, and not be hindered or hampered by having to do outside work for the purpose of continuing their studies. In 1902, a collegiate department was opened with funds bequeathed by Mr. Clark (d. 1900), for the establishment of an undergraduate department, similar to that of the post-graduate. The following unofficial publications issue from the univ.: *American Journal of Psychology; Pedagogical Seminary; Mathematical Review.* In 1906 there were 17 professors and 101 students; and the library contained 35,000 volumes and numerous pamphlets. The value of the grounds and buildings is about $230,000; productive funds about $725,000 and the total income about $45,000. In the summer the students make excursions for scientific research.

CLARY, n. *klā′rĭ* [probably corrupted from *claret,* referring to the red tinge of the tops], (*Salvia sclarea*): plant of the same genus with sage (q.v.), native of Italy and other southern countries of Europe, long cultivated for its aromatic and other properties. It is a biennial, about 2 ft. high, with clammy stem, large, heart-shaped, rough, and doubly crenate leaves, and whorls of pale-blue flowers in loose terminal spikes, with large colored bracteæ. The seed is generally sown in spring, and the plants flower in the second year. C. is anti-spasmodic and stimulating. It has an odor resembling that of balsam of tolu, and is used for seasoning soups, and in confectionery for flavoring. Its flowers are used for making a fermented wine, esteemed for its flavor. A British species of *Salvia* (*S. Verbenaca*) is sometimes called wild clary.

CLASH, n. *klăsh* [an imitative word: Dut. *kletse,* an echoing stroke: Ger. *klatschen,* imitative of the sound produced by striking with the hand against a partition or wall: F. *glas,* noise, knell: Gr. *klazo,* I clash, as arms]: a noise made by striking one thing against another; collision; an opposition of interests; contradiction: V. to strike one thing against another; to meet in collision; to meet in opposition; to interfere in interests. Clash′ing, imp.: Adj. interfering; opposite: N. a striking against in bodies; opposition. Clashed, pp. *klăsht.* Clash′ingly, ad. *-lĭ.* Clash, v. in *prov. Eng.,* to gossip: N. gossip; tittle-tattle.

CLASP, n. *klăsp* [OE. *clapse,* imitative of the sound of

a metal fastening: Dut. *gaspe*, a clasp or buckle]: a hook for fastening, as a book or article of dress; a catch; an embrace by throwing the arms around: V. to shut or fasten with a hook; to catch and hold by twining, to hold closely in the hand; to embrace closely. CLASP'ING, imp. CLASPED, pp. *klăspt*. CLASP-KNIFE, a knife with a folding blade.

CLASS, n. *klăs* [F. *classe*—from L. *classem*, a class: Icel. *klasi;* Sw. and Dan. *klase*, a bunch: comp. Gael. *clas*, a play, anything arranged in a set order] any persons or things arranged in a set position or order; a rank of persons a number of persons in society supposed to have the same position in regard to means, rank, etc.; a number of students in a college or pupils in a school, engaged in the same studies; a distribution or scientific arrangement into groups of creatures or things having something in common; a kind or sort: V. to arrange; to put into sets or ranks; to distribute into groups. CLAS'SING, imp. arranging in sorts or ranks; reducing to a class. CLASSED, pp. *klăst*. CLAS'SIFY, v. *-sĭ-fī* [L. *classis*, a class: *facĭō*, I make F. *classifier*]: to arrange or distribute into groups or divisions: to make into classes according to something common. CLAS'SIFYING, imp, arranging in sorts or ranks. CLAS'SIFIED, pp. *-fīd*. CLAS'SIFIER, n. *fī-ėr*, one who. CLAS'SIFICA'TION, n. *-sĭ-fĭ-kā'shŭn*, the act of arranging into classes, ranks, orders, families, groups, tribes, etc.; an arrangement into classes or sets. CLAS'SIFI'ABLE, a. *-fī'ă-bl*, that may be classified. CLAS'SIFICA'TORY, a. *-kā'tėr-ĭ*, forming the basis of classification. CLASS-MATE, n. one at school or college attending the same class.—SYN. of 'class, n.': order; rank; degree.

CLASS, in logic: a group of objects of thought of which the individual members, while differing from one another by distinguishing features, have in common certain definite marks or qualities by virtue of which they form a unity for thought. A class is defined by its *intension* or meaning. Its *extension* or extent of application follows from its intension. Two classes may have the same extension without the same intension. If there be no featherless bipeds who are not men, then the class-concepts *man* and *featherless biped* have the same extension but not the same intension or meaning. The class-group may have definite or indefinite extension, e.g., the class '*American soldier*' is definite, the class '*points in space*' is indefinite. A class may consist of individuals, e.g., *American generals*, or of smaller classes, e.g., *Europeans*. A *natural* class is one based on important or essential resemblances, an *artificial* class one based on unimportant resemblances. 'Man' is a natural class, 'Men who wear red neckties' an artificial one.

CLASSIC, a. *klăs'sĭk*, or CLAS'SICAL, a. *-sĭ-kâl* [L. *classĭcus*, of the first rank, superior—from *classis*, a class or rank]: pertaining to authors of the highest rank; relating particularly to Roman and Greek authors of the highest

rank; chaste; pure; refined. CLAS'SIC, n., a writer of the first rank; a standard book. CLAS'SICS, n. plu. *-sĭks*, the best anc. Greek and Roman authors; Greek and Latin literature; authorities or models of the first class. The term *classici* was originally applied to those citizens of Rome that belonged to the highest of the six classes into which Servius Tullius divided the population. As early as the 2d c. after Christ, it was applied figuratively by Gellius to writers of the highest rank, and this designation has been generally adopted in literature and art. Most nations have had at some one time a more than usual production of permanent literature, and this is often styled the classical period of their literature, and its most distinguished writers their classics. But as the best productions of the writers and artists of antiquity have continued to be looked upon as models, the word 'classics' has come to designate, in a narrower sense, the best writers of Greece and Rome, and 'classical' to mean much the same as 'ancient.' On the revival of learning in Europe the manifest superiority of the ancient classics to the crude productions of a semi-barbarous period gave rise to a large amount of servile imitation. This was especially the case in those countries whose languages most nearly approximated to the classical models, the Latin-speaking nations of southern and central Europe. German literature, which sprung into existence more recently, has perhaps most completely escaped the infection. In England the trammels of this sort of literary despotism were most experienced in the higher education, which was cast completely in a classical mold, and from force of habit has in great measure retained it, but the form and substance of the native literature have on the whole been wonderfully little affected by this exotic discipline. In Italy the early literature was very strongly penetrated with the classical spirit. It was in France, that the spirit of imitation took the strongest hold of the national genius. Under the influence of Hugo and others, however, France has latterly escaped from the trammels of her classical age. CLASSICALLY, ad. *-lĭ*. CLAS'SICAL'ITY, n. *-kăl'ĭ-tĭ*. CLAS'SICALNESS, n. CLASSICISM, n. *-sĭs-ĭzm*, a classic idiom or style; a pretentious affectation of the classical character. CLASSICIST, n. *klăs'ĭ-sĭst*, one having a competent knowledge of the classics.

CLASSIFICATION: the arrangement of objects of knowledge by classes in terms of their mutual relations of resemblance and difference. The goal of classification, for any department of knowledge, or, indeed, for the whole sphere of knowledge, is the arrangement of the various classes of objects of cognition into a systematic unity of such a character that every class will, in its due place, exhibit itself as an expression of the underlying principles upon which the classification is based. Obviously, then, the problem of classification is not of a merely formal or conventional kind and the character of any classification must depend upon and alter with

the development of knowledge in any field in question. In a *natural* classification the principles taken as uniting objects into classes should be such that they manifest themselves throughout the diversity of the objects concerned and carry with them the largest number of important correlated properties. In Zoology, for example, the structure and functions of the central nervous system constitute such a principle. Many other important properties of animal life are correlated with the presence or absence of a spinal cord. So we have the fundamental classes of Inchordata or Invertebrates and Chordata or Vertebrates.. An example of an *artificial* classification is the alphabetical arrangement of books in a library. The distinction between *natural* and *artificial* classification is not an absolute one. The letters of the alphabet are products and instruments of human culture and their order has become a *second nature.* Every classification grows out of some human purpose and has its value in relation thereto. Methods of classification, not only in the biological sciences, but in the humanistic sciences (psychology, ethics, sociology, history, etc.), as well, have been greatly affected by the doctrine of *evolution.* The 'classification of the sciences', an important part of philosophy, has been carried out in evolutionary terms, especially by Comte, Hegel, and Herbert Spencer.

CLASSIS, *klăs'ĭs* (L., class): a body in the Reformed Church of Holland, and in its American daughter, corresponding to a presbytery. It is composed of the pastors and some elders in a given district, and is intermediate between a consistory and a synod, hearing appeals from the former, while appeals from it go up to the latter. The C. ordains and deposes ministers, confirms and dissolves pastoral connections, and sends clerical and lay delegates to the local and general synods.

CLATHRATE, a. *klăth'rāt* [L. *clathri;* Gr. *klēthra*, a trellis or lattice]: in *bot.*, latticed like a grating. CLATHRA'RIA, n. *-rā'rĭ-ă*, a genus of fossil cycadaceous stems, so called from the lattice-like arrangement of the leaf-scars which ornament their surface.

CLATTER, n. *klăt'tėr* [an imitative word: Dut. *klater*, a rattle; *klateren*, to rattle]: a rapid, rattling noise made by hard bodies when brought sharply into contact; a noise tumultuous and confused; rapid, noisy talk; V. to make a rattling noise by striking hard bodies together; to talk rapidly and idly; to clamor. CLAT'TERING, imp. CLAT'TERED, pp. *-tėrd.* CLAT'TERER, n. one who. CLAT'TERINGLY, ad. *-lĭ.*

CLAUDE, *klawd*, Fr. *klōd*, JEAN: 1619–87, Jan. 13; b. Sauvetat, near Agen, on the Garonne: French Prot. theologian. He was prof. of theol. at Nimes 1653–61, at Montauban 1662–66, and afterward pastor in Paris. His zeal engaged him in controversies with Bossuet and others, and caused him to be twice silenced. On the revocation of the

Edict of Nantes, 1685, he fled to Holland, and was pensioned by the Prince of Orange. His eloquence was famous. Besides replies to Bossuet, Nouet, etc., he published *Défense de la Réformation* (1678), and *Plaintes des Protestants* (1686). He died at the Hague; lives of him were written by Nicéron and Laderize. His *Œuvres posthumes* (Amsterdam, 1688) contain the celebrated *Traité de la Composition d'un Sermon*, translated 1778.

CLAUDE, St. *săng klōd:* town of France, dept. of Jura, romantically situated at the confluence of the Bienne and Tacon, 25 m. s of Lons-le-Saulnier. The town originated in an abbey erected in the 5th c., which had extensive privileges, including a very oppressive one—viz., that a year's residence on the abbey-lands made a peasant a serf. Serfdom continued down to the Revolution. St. C. has a fine cathedral and manufactures of cotton and paper; and musical boxes, snuff boxes, toys, and fancy articles of horn, bone, etc., are largely made. Pop. 7,000.

CLAUDE LORRAINE, *klawd*, or *klōd*, *lor-rān'* (properly named Claude Gelée): 1600–82; b. Lorraine: landscape-painter. A relative, who travelled as a lace-dealer, took C., when a boy, to Italy, but deserted him in Rome. However, he soon found employment in grinding colors, and doing other menial services for Agostino Tassi, a landscape-painter, from whom he gained some knowledge of art. He studied next under Godfrey Waals at Naples, and, after wandering for some time through Europe, he finally settled at Rome 1627. The demand for his pictures rapidly increased, and he received numerous commissions.

C.'s landscapes are in the chief galleries of Italy, France, Spain, and Germany, and, in particular, England, which, according to Dr. Waagen, contains 54 paintings by him. Four of his best works—landscapes known as *Morning*, *Noon*, *Evening*, and *Twilight*—are in the royal gallery at St. Petersburg. The painting on which C. himself set the highest value is the *Villa Madama*. He kept it as a study, and refused to sell it, even when Pope Clement IX. offered for it as much gold coin as would cover the canvas. As C.'s paintings have always commanded very high prices many copies and imitations have been imposed on buyers. This was the case even during the artist's lifetime, for he set high prices on his works. In order to stop the fraudulent trade carried on in his name he collected the sketches of his pictures in six books, to which he gave the title *Libri Veritatis*. They are now in the library of the Duke of Devonshire.

C. was an earnest, indefatigable student of nature, and possessed great invention. No one could paint with greater beauty, brilliancy, and truth the effects of sunlight at various hours of the day, of wind on foliage, the dewy moistness of morning shadows, or the magical blending of faint and ever-fainter hues in the far horizon of an Italian sky; but it has been affirmed—especially of late—that his conception is often artificial, conventional, and positively untrue, and it must be admitted that his introduction of

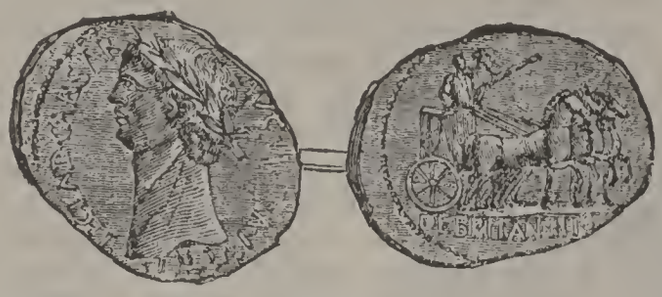
pseudo-Greek architecture into modern scenery is in utterly bad taste. His figures are in general such inferior accessories, that he was wont to say he made no charge for them when he sold his pictures. In his private character, C. was amiable and very generous.

CLAUDET'S FOCIMETER, *klō-dāz' fo-sim'ė-tėr:* instrument for ascertaining the coincidence or non-coincidence of the chemical and visual foci in portrait or landscape combinations of lenses. It consists of eight fans or equal segments of a circle, arranged spirally round a horizontal axis; they are white, and numbered from one to eight, with black figures, and when in use, are so placed as to be all seen together from the lens. The method usually adopted in testing a lens is to focus with great accuracy the fan numbered 4, and take a photograph of the instrument, in which, if No. 4 be the sharpest and best defined, it is a proof of the coincidence of the chemical with the visual focus; if, however, No. 3 should be sharper, the lens has been under-corrected; if No. 5, the lens has been over-corrected; in the former case, the lens must be turned more toward the ground glass, and in the latter further from the ground glass.

CLAUDIANUS, *klau-di-ā'nŭs,* Claudius: Latin poet of Alexandria, in the end of the 4th and beginning of the 5th c. He wrote first in Greek, which appears to have been his native tongue (though he was of Roman extraction); but, as Gibbon says, he 'assumed in his mature age the familiar use and absolute command of the Latin language, soared above the heads of his feeble contemporaries; and placed himself, after an interval of 300 years, among the poets of ancient Rome.' His poems brought him into such reputation, that, at the request of the senate, the emperors Arcadius and Honorius erected a statue in honor of him in the forum of Trajan. The productions of C. that have come down to us, consist of two epic poems, *The Rape of Proserpine,* and the incomplete *Battle of the Giants;* besides panegyrics on Honorius, idyls, epigrams, and occasional poems. C. has a brilliant fancy, rich coloring, with variety and distinctness in his pictures; but is often deficient in taste and gracefulness. Editions of his works were published by Gessner (1759), Burmann (1760), and Jeep (Turin, 1875). A poor English translation was executed by Hawkins (London, 1817); and a version of the *Rape* by Dean Howard. See Rosa.

CLAUDIUS, *klau'di-ŭs,* I., Tiberius, Roman emperor: B.C. 10—A.D. 54; b. Lyon; youngest son of Nero Claudius Drusus, who was step-son of the emperor Augustus. He was naturally sickly and infirm, and his education was neglected, or left to be cared for by women and freedmen. His supposed imbecility saved him from the cruelty of Caligula; but C., in his privacy, had made considerable progress in the study of history, and wrote in Latin and Greek several extensive works now lost. After the assassination of Caligula, C. was found by the soldiers in a corner of the palace, where, in dread, he had concealed

himself. The prætorians carried him forth, proclaimed him emperor, and compelled his recognition by the senate and many citizens who had hoped to restore the republic. By his payment of the troops, who had raised him to the throne, C. gave the first example of the baneful practice which subjected Rome to a military despotism under the succeeding emperors. The first acts of his reign gave promise of mild and just government, but in the year 42, when a conspiracy against his life was detected, his timidity led him to yield himself entirely to the guidance of his infamous wife, Messalina, who, in concert with the freedmen,



Coin of Claudius, representing his British triumph.
From the British Museum.

Pallas and Narcissus, practiced cruelties and extortions without restraint. C. meanwhile lived in retirement, partly occupied in studies, and expended enormous sums in building, especially in the famous Aqua Claudia (Claudian Aqueduct). This great work occupied 30,000 laborers during 11 years. Abroad, the armies of C. were victorious. Mauritania was made a Roman province, the conquest of Britain was commenced, and some progress was made in Germany. After the execution of Messalina, another woman, equally vicious and more cruel, Agrippina (q.v.), married the emperor, and destroyed him by poison, A.D. 54, in order to secure the succession of her son Nero. After his death, C. was deified.

CLAUDIUS, Marcus Aurelius, surnamed Gothicus; Roman emperor: 214–270 (reigned 268–270); b. Illyria, or Dardania. By ability and valor he rose from humble station, was made a general by Decius; and by Valerian placed in command on the lower Danube. Called to Italy to crush Aureolus he was proclaimed emperor by the army on Gallienus's death, and acknowledged by the senate 268, Mar. 24. On that day he won the surname of Germanicus by a victory over the Alemanni. His glorious title of Gothicus commemorates the first serious check received by the most dangerous invaders of the empire: in the great battle of Naïssus the Goths were totally defeated, and 50,000 killed. C. lived in an age of decadence, unfavorable to fame; but he was a great man, and the multitude (unparalleled since the 'good emperors') of coins struck *Divo Claudio*, after his death and deification, show the reverence felt for his character and services. He died at Sirmium of a pestilence which spread from the vanquished Goths. His short reign, and those of his successors Aurelian and Probus, whose careers were curiously similiar to his, are

among the few that redeem the 3d c. and make the throne illustrious.

CLAUDIUS, *klow'de-ŭs*, MATTHIAS: 1743–1815, Jan. 21; b. Rheinfeld near Lubeck: German poet. Nearly his whole life was passed in retirement at Wandsbeck, near Hamburg, where he conducted a weekly paper, the *Wandsbecker Bote* (*Messenger*), 1770–75, and prepared his collected works, *Asmus omnia sua secum portans* (8 vols. 1774–1812). His muse was humorous, popular, and moral; but in later life he became a pietist, and wrote only on grave subjects. C. was intimate with Klopstock. His *Rheinweinlied* is still popular, and many of his songs have been set to music. His life was written by Herbst (Gotha, 1857), and a book on C. and Hebel by Kahle (Berlin, 1864).

CLAUDIUS CÆCUS, *klau'dĭ-ŭs sē'kŭs*, APPIUS: B.C. 4th c.: Roman author and partrician. Without passing through the office of consul, he was elected censor, B.C. 312, placed men of low birth in the senate, held his office in defiance of custom after his colleague resigned, retained it three and a half years beyond the limit of the Æmilian law, transferred the charge of the public worship of Hercules from the Politiangens to the public slaves, and built the great road and aqueduct between Rome and Capua, named from him 'the Appian Way.' He resigned the censorship, B.C. 306, was elected consul 307, made interrex 298, and led the army in Samuium 296, subsequently he became praetor, and was at one time dictator. He opposed with much vigor the attempts of Cineas, minister of Pyrrhus, king of Epirus, to negotiate a treaty with the Romans. He was author of a poem, mentioned by Cicero, and of a legal work, *De Usurpationibus*, and is believed to have been at least a part author of the *Legis Actiones*, published by Flavius.

CLAUDIUS CRASSUS, APPIUS: see APPIUS CLAUDIUS CRASSUS.

CLAUS, SANTA: see NICHOLAS.

CLAUSE, n. *klawz* [F. *clause*, a clause—from L. *clausa*, a period, a clause—from L. *clausus*, shut—*lit.*, a thing concluded or closed up, an inclosure]: a part shut off; a part or member of a sentence; an article in an agreement; a stipulation in a document: see DEED. CLAU'SULAR, a. *-zū-lĕr*, consisting of or having clauses.

CLAUSEL, *klō-zĕl*, BERTRAND: French marshal: 1772–1842; b. Mirepoix, Ariège; obtained distinction in the Italian and Austrian campaigns of Napoleon; but especially as commander in Spain, after the battle of Salamanca, 1812. Condemned to death as a traitor after the return of the Bourbons, he was permitted to return from exile to France; commanded in Algeria 1830; and was made gov.-gen. of Algeria, 1835.

CLAUS'ENBURG: see KLAUSENBURG.

CLAUSEWITZ, *klow'zĕh-vĭts*, KARL VON: 1780, June 1—1831, Nov.; b. at Burg: distinguished Prussian general, whose writings prepared the way for a complete revolution in the theory of war. He served with distinction in several

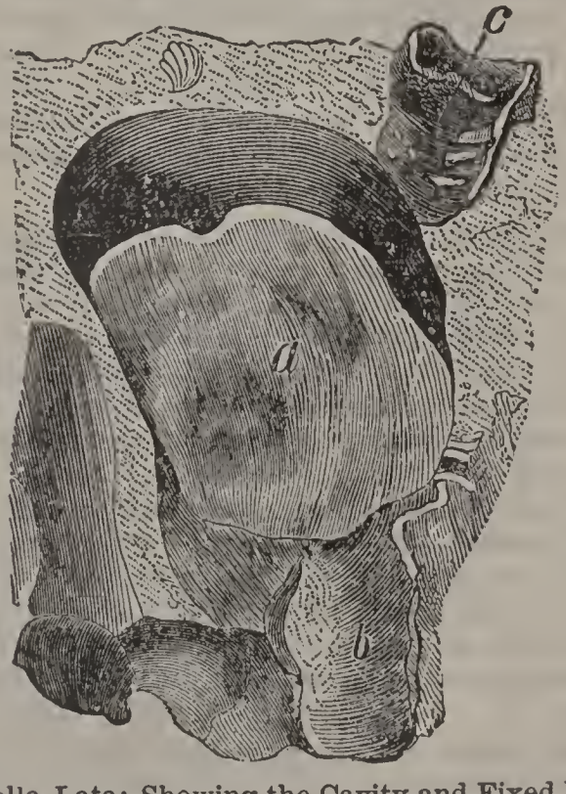
campaigns in the Prussian and in the Russian service, was a staff-officer under Blücher, 1813, and in 1815 became chief of a Prussian army corps, and was ultimately director of the army school, and inspector of artillery. He died of cholera at Breslau. Of his works, the best known are his great book on war, *Vom Krieg* (3 vols.), and his life of Scharnhorst.

CLAUS'THAL: see KLAUSTHAL.

CLAUSTRAL, a. *klaws'trăl* [F. *claustral;* L.L. *claustralis*—from L. *claustrum*, a cloister—from *claudo*, I shut up, I inclose]: of or pertaining to a cloister or religious house; living in a cloister or religious house.

CLAVAGELLA, *clăv-a-gĕl'la*, or CLUB-SHELL: genus of lamellibranchiate mollusks of the same family with aspergillum (q.v.), of which fossil species were first known to naturalists, but existing species also have been discovered. These mollusks inhabit holes which they excavate for themselves in rocks or in masses of coral, and the ordinary form of the bivalve shell is curiously modified, one valve being fixed to the inner surface of the chamber in which the animal lives, and the other free and capable of motion on its hinge within that chamber, while the shelly substance

Clavagella Aperta:
External view of the free valve.




Clavagella Lata: Showing the Cavity and Fixed Valve.
*a*, the fixed valve; *b*, the calcareous tube; *c*, a cavity communicating by a tubule with that of the clavagella.

of the fixed valve is continued without interruption into a

tube extending from the chamber outward, The young mollusk is supposed to make its way into the rock by excavating this tube, but whether its excavations are accomplished by mere mechanical means, or by the aid of some chemical solvent, is still uncertain.—Fossil *Clavagellæ* have not been found in any strata older than the supracretaceous group.

CLAVARIA, *klă-vā'rĭ-a:* genus of *Fungi* of the division *Hymenomycetes*, subdivision *Clavati*. The spores are produced equally on all parts of the surface. The species are numerous, some simple and club-shaped, some branched. *C. botrytis*, a species common in oak and beech woods in Germany, growing on the ground, among moss, grass, heath, etc., is gathered when young, and used as food, having an agreeable, sweetish taste. It ceases to be edible when old. Another German species, *C. flava*, which grows on sandy ground in fir-woods, is used in the same way. Other species appear to have similar properties, and Liebig found them to contain the saccharine substance called mannite. *C. botrytis* is the *Keulenpilz*, and *C. flava* the *Ziegenbart* (goat's beard) of the Germans.

CLAVATE, a. *klā'vāt* [L. *clava*, a club: Skr. *cûla*, a lance or club]: in *bot.*, club-shaped; becoming gradually thicker toward the top. CLAVIFORM, a. *klā'vĭ-fawrm* [L. *forma*, shape]: same sense as preceding. CLAVELLOSE, a. *klāv'ĕl-lōz*, having club-like processes.

CLAVE, v.: see under CLEAVE 1.

CLAVICLE, n. *klăv'ĭ-kl* [F. *clavicule*, the collar-bone—from L. *clāvic'ŭla*, a small key—from *clāvis*, a key]: the collar-bone—so called from its supposed resemblance to an anc. key. CLAVICULAR, a. *klă-vĭk'ū-lĕr*, pertaining to the collar-bone. CLAVIARY, n. *klā'vĭ-ĕr'ĭ*, in *music*, an index of keys. CLA'VIER, n. *-ĕr*, the key-board of an organ or piano. CLAVICHORD, n. *klā'vĭ-kawrd* [L. *chorda*, a chord]: a musical instrument like a small pianoforte.

CLAV'ICLE, or COL'LAR-BONE: a bone which, in conjunction with the scapula (q.v.) or blade-bone, forms the shoulder. As reference to the figure shows, it is placed horizontally at the upper and lateral part of the thorax, immediately above the first rib, and it articulates internally with the upper border of the sternum (q.v.) or breast-bone, and externally with the acromion process (or highest point) of the scapula.

Its chief office is to keep the shoulders well separated and steady, and to afford a fulcrum by which the muscles (the deltoid and great pectoral) are enabled to give lateral movement to the arm. Accordingly, it is absent in those animals in which the movement of the fore-limbs is only backward and forward (in one plane) for the purpose of progression, as in the Pachydermata, Ruminantia, and Solidungula; while it is present in all Quadrumana, and in those of the Rodentia, in which the anterior extremities are used for prehension as well as motion, as the rat, squirrel, and rabbit; and in the cheiroptera and insectivora, as the bat, mole, and hedgehog. In the mole it occurs in the

form of a cube, being very short and broad, and of extreme strength. In many of the Carnivora (the cat, for example) the C. is present in the rudimentary form of a small bone suspended (like the hyoid bone in the neck) among muscles, and not connected with either the sternum or the scapula. In birds, where great resistance is required to counteract the tendency of the enormous pectoral muscles to approximate the shoulders, the clavicles are large and united at an angle in the median line (just above the anterior end of the sternum) into a single bone, anatomically known as the 'furculum,' but popularly recognised as 'the merry-thought.' (A lateral view of the furculum is given in the figure of the skeleton of the golden eagle in the article BIRDS.) In this class of animals, additional, and even more efficient, support to the anterior extremity is afforded by the extension of the coracoid process of the scapula into a broad, thick bone called the 'coracoid bone' (q.v.), which extends to the sternum. This bone presents various modifications in reptiles and certain fishes.

In the human subject, the C. being exposed to the full force of blows or falls upon the shoulder, and not being

*ab*, the Clavicle.

easily dislocated (in consequence of its being well secured at both ends), is frequently broken.

Ossification takes place in the C. earlier than in any other bone, commencing as early as the 30th day after conception, according to Beclard; and at birth it is ossified in nearly its whole extent. Mr. Humphrey (*Treatise on the Human Skeleton*) suggests that the early ossification of this bone is a provision on the part of nature to prevent it from being fractured at birth in case of difficult labor.

Much important anatomical and physiological matter in connection with this bone is in Humphrey's work above cited, and in a memoir which he has recently published in the transactions of the Cambridge Philosophical Soc.; in Owen, *On the Nature of Limbs;* and in Struthers, *Osteological Memoirs, No.* 1, *The Clavicle.*

CLAVICORNES, *klav'i-kawrnz* or *klăv-ĭ-kawr'nēz* [L., club-horned]: great family of coleopterous insects, of the section *Pentamera*, distinguished by the club-shaped termination of the antennæ, which are longer than the maxillary palpi. Most of the beetles of this family feed on

animal substances, and many of them, and particularly their larvæ, find their food in substances undergoing decay. It contains many genera, divided into groups (tribes), *Histeroides, Silphales, Dermestini*, etc. Burying beetles and the bacon beetle may be mentioned as examples of it.

CLAVIGERO, *klâ-ve-ċhā′ro*, Francesco Saverio: abt. 1720–1793, Oct.; b. Vera Cruz: Mexican historian. He entered the order of Jesuits and was educated as an ecclesiastic. Sent as a missionary among the Indians in various parts of Mexico, he lived among them 36 years, and made himself fully acquainted with the languages, traditions, and antiquities of the aboriginal tribes. On the suppression of the Jesuits in America by Spain, 1767. Clavigero sailed for Italy, and with others of his brethren had the town of Cesena assigned by the pope as a place of residence, where he died. He wrote in Italian a *History of Mexico* a comprehensive and valuable work (Eng. transl. by C. Cullen. 1787, 2 vols. 4to).

CLAW, n. *klaw* [Dut. *klauwe* or *klaauw*, a ball, a claw: Icel. *kló*, a claw; *klá*, to scratch: L. *clāvus;* F. *clou*, a nail]: a sharp hooked nail in the foot of a cat, bird, or other animal; the whole foot of a bird; in *bot.*, the narrow base of some petals corresponding to the petiole of leaves: V. to tear or scratch with the nails. Claw′ing, imp. Clawed, pp. *klawd:* Adj. furnished with claws. Claw′less, a. destitute of claws.

CLAW, v. *klaw* [ Gael. *cliù;* W. *klod*, praise, fame]: in *Scot.* and *OE.*, to praise; to flatter

CLAY, n. *klā* [AS. *clæg*, sticky earth: Dan. *klæg*, clammy, sticky: Dan. *klag*, mud]: a tenacious tough, and plastic kind of earth; earth in general; in *Scrip.*, frailty; liability to decay: V. to cover with clay; to purify and whiten by means of clay, as sugar. Clay′ing, imp. Clayed, pp. *klād:* Adj. applied to sugar, purified by means of water percolating through a layer of clay. Clay′ey, a. *-i*, abounding in clay. Clay′ish, a. - *ĭsh*, containing clay. Clay-marl, *-mârl*, a whitish, chalky clay. Clay-slate, roofing-slate. Clay-stone, an earthy felspathic rock, generally of a buff or reddish-brown color.

CLAY, any aluminous silicate having plasticity: that is, which can be molded, when moist, into forms which become stone hard after exposure to a red heat or higher temperature. Plasticity is a physical quality, apparently having little relation to chemical composition, and the exact reason why one clay is more plastic than another is even yet largely a matter of speculation. The base of all clays is the mineral kaolinite, having the formula $Al_2O_3.2SiO_2+2H_2O$, giving silica 46.3 per cent; alumina, 39.8 per cent; water 13.9 per cent. It is made up of minute hexagonal plates and results from the decay of feldspathic rocks, particularly granites and gneisses. There is no clay known, however, which contains more than 98 per cent of this base, even after washing. In a broad way clays may be divided into: (1) Pure clays, mostly silica

and alumina, with small amounts of iron, lime, magnesia, soda, and potash; (2) sandy clays or loams, comprising much of the arable soil of the world; and (3) limy clays or marls, clays containing a high per cent of lime. Clays are also given a great variety of names, according to special characteristics and economic use. The important divisions, based on use in the arts are: Kaolin, or China clay, pottery clay, fire clay, and brick clay. Pure kaolin or China clay is rare. It is pure white and almost free from iron salts. Kaolin has little plasticity, and in making pottery other clays are often added to give this quality. It may occur as residual kaolin in the position of the original feldspar body, a vein or dike, or, if transported by streams and deposited at a distance in beds, as sedimentary kaolin. Besides being used in making pottery and white tiling and brick, it is largely employed in the manufacture of paper, for weighting the paper and giving a better surface. Fire Clays differ much in color, hardness, texture, and composition, and some clays used in making fire brick are not particularly refractory, but are used for their high plasticity. Strictly a fire clay is a nearly pure mixture of sand and clay with only traces of iron, lime, and magnesia, and hence makes white or light colored bricks, which can stand very high temperatures. Fire clays are divided into plastic and flint, the former, if hard when dug, becoming plastic when ground and mixed with water; the latter, though sometimes having nearly the same composition, do not become plastic when similarly treated. True clays are mostly of sedimentary origin; in the U. S. they are found in rocks of many geological periods, but chiefly in the Carboniferous and Cretaceous. Clays for potter' use, apart from the materials used in accessory work, such as firebricks, saggers, etc., are divided into two classes, kaolin and ball clays. The potter's kaolin is a residual clay which remains white after burning; there is usually more or less undercomposed fedspar and grains of quart associated with this clay, and hence most kaolins are washed before being put on the market. Ball clay,—probably corrupted from bowl clay,—is a sedimentary clay, having been washed up and redeposited. It is valued for a high plasticity which kaolin does not possess. The purest ball clay is found in Florida and is sold under the name of 'plastic kaolin.' Most of these clays burn to a cream or almost a stone color. Brick clays are mixtures of sand and kaolinite with lime, magnesia, iron, potash, and soda; in fact, bricks are often made from sandy mixtures which are not properly clay. A mixture with considerable iron burns red, from the oxidation of the iron. Carbonate of lime, or magnesia, by forming light-colored silicates, counteracts this red color. The sedimentary glacial clays are largely used for brick-making in the northern States, sedimentary surface clays and loams in the western States, and residual clays in the southern States. All that is required is that the brick shall be of good color, dense, hard, and of regular form. Brick material of good quality is found in nearly every State of the Union.

CLAY SOILS derive their character from the alumina which they contain in a state of mixture, as well as in chemical combination with other substances. Some soils contain as large a proportion of alumina as 40 per cent., but generally the propertion is much smaller. The felspar which chiefly yields the alumina of clay soils contains, also, soda and potash, substances essential to vegetables, and which tend to render clays fertile when under cultivation The physical characters, however, of the different varieties of clay soils arising from the varying proportions of silica, and other substances mixed with the alumnia, are chiefly concerned in their relative fertility. Calcareous matter exercises considerable influence on their powers of producing crops.

*Clay Products*—In the year 1905 the total clay products of the United States were valued at $149,697,188. These included common brick, $61,394,383; vitrified paving brick, $6,703,710; front brick, $7,108,092; fancy brick, $293,907; enameled brick, $636,279; fire brick, $12,735,404; drain tile, $5,850,210; sewer pipe, $10,097,089; architectural terra cotta, $5,003,158; fireproofing, $4,098,793; tile, (not drain), $3,647,726; miscellaneous, $4,209,543; pottery, $27,918,894.

CLAY, CASSIUS MARCELLUS: politician: b. Madison co., Ky., 1810, Oct. 19; son of Gen. Green Clay. He graduated at Yale College 1832; became an abolitionist; was admitted to the bar and practiced in his native co.; elected to the legislature 1835, 37, and 40; opposed the annexation of Tex.; started *The True American*, a strong anti-slavery paper, in Lexington 1845; supported Henry Clay for pres.; served in the Mexican war; carried Ky. for Gen. Taylor 1848; supported Fremont 1856, and Lincoln 1860; was minister to Russia 1862–69; encouraged the Cuban revolution 1870; attacked Pres. Grant's administration; and supported the gold ticket in 1896, Died July 21, 1903.

CLAY, CLERMONT CLAIBORNE, American senator: b. Huntsville, Ala., 1819; d. there 1882, Jan. 3. He graduated at the University of Alabama in 1835, and after studying law in the University of Virginia, was admitted to the bar in 1840. He was elected to the Alabama legislature, 1842, 1844, and 1845; was judge of the Madison County court 1846-8. He was chosen United States Senator in 1853, and re-elected in 1859, receiving every vote in the legislature. In the Senate he supported the admission of Kansas under the Lecompton resolution, and was an ardent advocate of the State sovereignty doctrine. He was formally expelled in 1861, and became a senator in the Confederate Congress. In 1864 he was a secret agent of the Confederacy in Candaa, but in 1865, May, gave himself up to the United States authorities and was a fellow prisoner of Jefferson Davis at Port Monroe. After his release in 1866 April, he returned to the practice of law in Huntsville.

CLAY, FREDERIC, English composer: b. Paris, 1840,

Aug. 3; d. London 1889, Nov. 27. He studied music at Paris, and settled in London as a composer for the stage, his most successful production being *The Black Crook*. He composed several popular songs, the best known being *She Wandered Down the Mountain Side*.

CLAY, GREEN, American soldier: b. Powhatan County, Va., 1757; d. Kentucky 1826, Oct. 31. He was a cousin of Henry Clay (q.v.). He went to Kentucky early in life and there acquired a fortune as a surveyor. He filled many local offices, was a member of the convention that ratified the Federal constitution, of the Kentucky Constitutional Convention of 1799, and served for many years in the State legislature. On 1813, March 16, Gov. Shelby commissioned him a brigadier-general, and in May of that year, when Gen. Harrison was besieged by the British at Fort Meigs, on the Maumee River, Clay came to his relief with 3,000 volunteers. He was left in command of the fort and successfully defended it against a combined attack of British and Indians under Gen. Proctor and Tecumseh.

CLAY, *klā*, HENRY: 1777, Apr, 12—1852, June 29; b. 'The Slashes,' Hanover co., Va.: statesman and orator. He was the fifth of seven children of a Baptist preacher, who died when Clay was four years of age. At fourteen he entered a store in Richmond, and a year later the office of the clerk of chancery: here he attracted the notice and favor of Chancellor Wythe, whose aid and advice benefited him greatly. After studying law under Robert Brooke, attorney-gen. of Va., he was admitted to the bar 1797, followed his mother to Ky., and opened an office at Lexington. His eloquence and social gifts won rapid success; it is said that some of his most brilliant speeches were made in criminal trials before he was 25. He married 1799 Lucretia Hart (1781–1864). His political career began in the canvass for members of a convention to revise the state constitution, 1799; he advised the gradual emancipation of the slaves, and attacked the alien and sedition laws. He was elected 1803 to the legislature, and 1806 (when not yet quite of the required age) to the U. S. senate, to fill the unexpired term of Gen. J. Adair. Here, though he sat for but a few months, he took an active part on committees and in debates, urging the construction of a bridge over the Potomac and a canal around the falls of the Ohio, with a general appropriation for internal improvements. Returning to the Ky. legislature 1807, he was made speaker, and procured the defeat of a bill which narrowly aimed to exclude the use of British reports and decisions from Ky. courts, but brought in resolutions approving the embargo and pledging to govt. the support of Ky. in any resistance to British aggression, besides one advising the wearing of domestic fabrics only. For the latter he was called a demagogue by Humphrey Marshall, whom he challenged to a duel; they exchanged two shots, and each was slightly wounded. Again sent to the U. S. senate, 1809, to fill Judge J. B. Thruston's unexpired term, he favored encour-

aging home industries, that the country might supply its own needs in time of war, and introduced a bill to regulate trade with the Indians and maintain peace on the frontier, In the session of 1810–11, he defended the occupation of w. Fla., urged the organization and admission of La. as a state, and opposed the renewal of the U. S. Bank charter. He was now sent to the house of representatives: so high a reputation had he won in the senate that on taking his seat 1811, Nov. 4, he was at once chosen speaker, and accepted as their leader by the dominant party Alike by the composition of committees and by vehement speeches on the floor, he urged on war with England, which was declared 1812, June. It did not end as soon as Clay expected but while it lasted he gave earnest support to the govt. Party spirit sometimes carried him beyond the bounds of courtesy, as in his violent denunciation of the federalists, and especially of Josiah Quincy, during the first winter of the war. He was re-elected speaker 1813, May, but resigned 1814, Jan., to go to Europe with J. Q. Adams and other peace commissioners. During the negotiations at Ghent, Clay opposed allowing British navigation of the Mississippi. The treaty was signed Dec. 24, and after some months in Paris and London, he reached home 1815, Dec., and declined the mission to Russia. Successive re-elections kept him in congress and in the speaker's chair till 1821 (and 1823–25). He favored the protective tariff of 1816, and acknowledged changed convictions as to the bank, which he now thought constitutional and necessary. He steadily urged internal improvements and defended, against Monroe and Madison, the right of congress to undertake them. He advocated through two sessions the recognition of the independence of the Spanish American states, and saw that end attained 1822. He alienated Jackson 1819 by criticising his Fla. campaign, and blamed the administration for abandoning Texas. He led in the discussions, 1819–20, as to the admission of Mo., opposed the clause which forbade slavery there, but supported the compromise proposed by Thomas, of Ill., excluding that institution from newly-acquired territory n. of 36° 30′; his committee, with one of the senate, settled the Mo. affair 1821. The next two years he spent in private practice, but returned to Congress 1823, Dec., to follow the lines of his former policy in the 'American system' and the tariff of 1824. He was now one of four candidates for the presidency, but received the lowest vote of all. The election devolving on the house, he voted for J. Q. Adams, who made him sec. of state (1825–29). On this arose charges of 'bargain and corruption,' which though refuted, followed Clay through life. John Randoph of Roanoke denouncing the administration as a 'combination of the puritan and the blackleg,' Clay challenged him, and a bloodless duel was fought 1826, Apr. 8, Randolph refusing to aim at Clay. As sec. he negotiated treaties with Prussia, the Hanse towns, Denmark, Colombia, Central America, Austria, and several with England. On Jackson's inauguration, 1829,

he retired to his farm of Ashland, but was still regarded as the head of the opposition, and in several journeys s. and w. made speeches against the govt. He was elected, 1831, to the U. S. senate, where he was a principal figure till 1842. The anti-tariff excitement brought Jackson strong southern support, and Clay's first measures for reduction of duties proved inadequate. He was the national republican candidate for pres. 1832, but received only 49 electoral votes to Jackson's 219. His Compromise Bill of 1833, Feb. 12, providing for a gradual reduction of the tariff till 1842, to be followed then by a 'horizontal' rate of 20 per cent, was accepted by the S. C. nullifiers, and Clay was again hailed as 'the great pacificator.' He introduced the resolutions of 1833, Dec. (expunged 1834), censuring the pres. for removing the deposits, and denounced Jackson's protest. Continuing his active opposition, he succeeded in withholding from the pres. the desired authority to make reprisals on the French for not paying an indemnity, attacked his sweeping removals from office and endeavored to restrict his power therein. He favored, 1835–36, the reception of anti-slavery petitions, and opposed the exclusion of anti-slavery documents from the mails, but resisted the proposed abolition of slavery in the District of Columbia, and reported favorably 1836, June, as to the recognition of Texan independence under certain conditions. From 1836 he was pres. of the Amer. Colonization Soc., succeeding Madison. He advocated international copyright 1836-37. Re-elected to the senate 1837, he denounced Van Buren's sub-treasury system as a plan to 'unite the power of the purse with the power of the sword,' and wished to re-establish the old U. S. Bank. He coveted the whig nomination, 1839, Dec., and had a plurality of votes; though chagrined at his defeat, he made many speeches for Harrison, and declined the portfolio of state 1841. Now the unquestioned whig leader in Congress, he pushed a repeal of the sub-treasury act, and framed two bank bills, both of which Pres. Tyler vetoed. Clay now denounced the pres. and read him out of the party. His land bill was at length passed. After unsuccessful efforts to limit the veto power, and otherwise hamper the administration, he took leave of the senate 1842, Mar. 31, never, as he said to return. He now journeyed about the country, making speeches in favor of a tariff for revenue with incidental protection; neither his eloquence nor the charm of his manners was impaired, and the warmth with which he was received proved his popularity. His 'Raleigh letter,' 1844, Apr. 17, opposed the threatened annexation of Texas as unfair to Mexico, sure to cause war, and strongly objected to in the north. May 1, the whig national convention nominated him by acclamation. To conciliate the south he wrote another letter, saying he would be 'glad to see' Texas annexed 'without dishonor, without war, with the common consent of the Union, and upon fair terms.' This compliance strengthened the anti-slavery party, which had nominated J. G. Birney, and probably cost Clay the vote

of N. Y. and thus the election. The contest was hot and close; democratic frauds were charged in N. Y. and La.; Penn. was carried by a letter of Polk apparently favoring a protective tariff, and Clay, to the deep disappointment of his friends and his party received but 105 votes to his rival's 170. The annexation of Texas followed, and the Mexican war, in which Clay lost a son. In the fall of 1847 he made a manly speech at Lexington, deprecating the ambition of conquest, desiring a generous peace, and reprobating the lust of increased territory for the extension of slavery. In 1848, Feb. and Mar., he was received with great honor in Baltimore, Philadelphia, and New York. His name was prominently before the convention of June 7, but Gen. Taylor was more available. Disgusted and embittered, Clay took no part in the canvass, professing to regard Taylor's party soundness and loyality as doubtful. Taught by experience, he returned to his position of fifty years before, and, in view of another convention to revise the Ky. constitution, again advised gradual emancipation. 1849, Dec. 3, he again entered the U. S. senate. Cal., N. Mex., and Utah sought admission, and leading southerners insisted that they should be slave states. Webster was preparing a compromise, but Clay was first with his scheme of 1850, Jan. 29, which admitted Cal. and established territorial govts. in Utah and N. Mex., postponing the crucial test: see COMPROMISE MEASURES OF 1850. The 'Omnibus Bill,' reported by Clay's committee Apr. 18, was defeated, but he secured the passage of its provisions one by one. This, though of no permanent value, was the greatest triumph of his opportunist statesmanship. In 1851, Jan., Clay and 43 other senators and representatives issued a declaration that they would support no man not opposed to any disturbance of this settlement; in Feb., he favored giving the pres. extraordinary powers to enforce the new and more stringent fugitive-slave law, already exciting wrath and resistance in the north. After a long rest at Ashland, he returned to Washington, 1851, Dec., in feeble health, was able but once to appear in the senate, and gradually sank.—Between Clay and his rival Webster, long the two greatest public men in America, there is a curious parallel. They held the same views and were governed by the same motives; both suffered from the lust for high office, and made unavailing sacrifices to it. Webster was the more splendid orator, the more majestic presence, the more commanding intellect, but Clay the more skilful manager and the more amiable man. As Benton said, will rather than intellect wins, and Clay's will was the stronger. He came less short of the ideal than Webster, being more in harmony with his environment. Both missed the goal of their chief ambition, but Webster's defeat was more crushing and complete. More was expected from the puritan than from the borderer, and less was rendered.—Lives of Clay have been written by G. D. Prentice (Hartford, 1831), Epes Sargent (1844), and with his speeches, by J. B. Swaim (N. Y. 1843), D. Mallory (1844

and more completely by C. Colton (6 vols. 1846–57). His career has been reviewed by Carl Schurz in the *Statesmen* series (2 vols. Boston, 1887).

CLAYBORNE, *klā'born*, or CLAIBORNE, WILLIAM: abt. 1589—abt. 1676; b. Westmoreland, England: a settler of Va. and 'evil genius of Md.' As surveyor of the Va. plantations he emigrated 1621, was made sec. of the colony 1625, and acquired large estates. Under commissions from two govs., 1628–31, and a patent from Charles I., 1631 authorizing him to make discoveries and trade with the Indians, he planted Kent Island in Chesapeake Bay, and established a trading-post there. Lord Baltimore's patent of 1632 conflicted with his prior right, which Clayborne would by no means yield: hence arose troubles never finally settled till Va. 1776 released all claim to territory n. of the Potomac. Leonard Calvert, gov. of Md., expelled Clayborne 1635, with some bloodshed on each side. Clayborne went to England, 1637, to push his claims, and 1642 was made treasurer of Va. He reappeared 1646 in Kent I., but his connection with the expulsion of Calvert from Md. 1645–46, and with the assumption of its govt. by R. Ingle, capt. of a parliamentary ship, is not clear. Appointed 1651, with three others, to reduce Va., Clayborne obtained possession of Md. 1652, and held it till 1658. His petition, 1675, for redress of many alleged wrongs was disregarded, and he died on his Va. estates. His numerous descendants in Md., Va., Mo., Miss., and La., spell the name Claiborne.

CLAYMORE, n. *klā'mōr* [Gael. *claidheamh*, a sword, and *mor*, great]: the Highland broadsword, formerly much used, not now very common. It had a double-edged blade about 43 inches long and 2 in. broad; its handle was often 12 in. long: and its weight 6 or 7 pounds.

CLAYTON, *klā'ton:* village and port of entry in Jefferson co., N. Y., on the St. Lawrence, opposite the Thousand Islands; a terminus of the Utica and Black River railroad, 108 m. n. by w. of Utica. It has a good harbor, a landing for vessels, and some pretensions as a summer resort. Pop. (1910) 1,941.

CLAYTON, JOHN MIDDLETON, LL.D.: 1796, July 24—1856, Nov. 9; b. Dagsborough, Sussex co., Del.: statesman. He graduated at Yale 1815, studied law at Litchfield, Conn. and began to practice 1818 in Del. He was sent to the legislature 1824, and to the U. S. senate 1829–37, where he won a high place by speeches on the Foote resolution 1830, and later in the French spoliation claims. He was chief-justice of Del. 1837–40, and again in the senate 1845–49, and 1851–56. In 1849–50 he was sec. of state under Pres. Taylor, and negotiated with Sir. H. Bulwer the treaty which bears their names; this he defended in the senate 1851.

CLAYTON-BULWER TREATY: convention between the United States and Great Britain, negotiated at Washington 1850, and signed July 4 of that year by John M.

Clayton, sec. of state of the United States, and Sir Henry Lytton Bulwer, special envoy of Great Britain. The object of the negotiations was to settle disputed questions concerning territory and jurisdiction in Central America; Great Britain maintained possession of the Belize and a protectorate over the Mosquito Indians, while the United States desired to secure immunity from foreign control for the territory near the prosposed ship-canal across Nicaragua. By this convention, both governments agreed not to maintain any exclusive control over the canal, nor to build any fortifications near it, nor to occupy or exercise any dominion over any part of Central America, nor to use connections with governments there in order to gain any commercial advantages over each other with respect to the canal. When it became evident that the United States would undertake a canal across the Isthmus, the American authorities sought a modification of the original Clayton-Bulwer Treaty. In 1899-1900 a convention between the United States and Great Britain was signed, in which the former sought to amend the original compact by having the clause 'joint control' abrogated, but when this convention came before the United States Senate that body so altered it that the British government declined to accede to the new form. On 1901, Nov. 18, a new convention was signed which abrogated the clause to which the United States had objected, and on this a definite treaty was ratified, 1902, Feb. 21.

CLAYTONIA, *klā-tō′nĭ-a*, or Spring Beauty, genus of plants of the order *Portulacaceæ;* first described 1762, and named from John Clayton (1686–1773), the Va. botanist. The flower opens in early spring, is common in the United States, and found in parts of Asia. Some species have been naturalized in Europe. The tubers of the Claytonia *tuberosa* are used as food in Siberia.

CLAZOMENÆ, *klâ-zŏm′ē-nē:* one of the twelve cities of Ionia. It was built originally on the Hermæan Gulf, westward from Smyrna; but the inhabitants having, through fear of the Persians, fled to a neighboring islet, and Alexander the Great having connected the islet with the mainland by a dike, the city subsequently extended over the peninsula thus formed. It is now called Vurla.

CLEADING, n. *klē′dĭng* [Ger. *kleid;* Icel. *klædi*, a garment: W. *clyd*, warm]: in *Scot.*, clothing; a covering for the cylinder of a steam engine or for a locomotive, to prevent radiation of heat.

CLEAN, a. *klēn* [AS. *clæne*, pure: Icel. *glan*, shine, polish: Gael. and W. *glan*, clean, pure]: free from dirt or any offensive matter; not foul; free from moral impurity; pure; neat; dexterous or adroit; Adj. perfectly; wholly; fully: V. to free from dirt or any foulness. Clean′ing, imp. Cleaned, pp. *klēnd.* Cleanly, a. *klĕn′lĭ*, free from dirt or foul matter; neat; pure. Cleanly, ad. *klēn′lĭ*, elegantly; innocently; cleverly. Clean′ness, n. *-nĕs*, freedom from dirt or filth; purity. Clean′er, n.

one who. CLEANLINESS, n. *klĕn'lĭ-nĕs,* purity; neatness of dress. CLEANSE, v. *klĕnz,* to purify; to make clean; to remove dirt or any foul matter; to purify from guilt. CLEAN'SING, imp. CLEANSED, pp. *klĕnzd,* made clean; purified. CLEAN'SER, p. *-klĕn'zĕr,* one who. CLEANSABLE, a. *klĕn'ză-bl,* that may be cleaned.

CLEAN-KAM: in *OE.*, a corruption of KIM-KAM, which see.

CLEANTHES, *klē-an'thēz:* abt. B. C. 300–220: b. Assos, in Troas: stoic philosopher. His poverty was such that he had to work all night at drawing water, in order to obtain money for his support while attending the lectures of Zeno. For 19 years he listened patiently to the great Stein, and on his death succeeded him in his school. He died of voluntary starvation when about 80 years old. Cleanthes differed, it is said, from the other stoics, in regarding the sun as the governing principle of the world; but none of his writings are extant except a *Hymn to Zeus,* one of the purest and noblest pieces of poetry in the Greek language. It is an admirable union of such religious feeling as paganism afforded, with philosophic thought, and gives a very favorable impression concerning the author, who, from all that is known, may be deemed a man of stern and serious character. The *Hymn to Zeus* has been edited by Brunck (1778), Schäfer, Schwabe, Petersen, and Koraïs (1826). See Zeller's history of Greek Philosophy.

CLEAP, n. *klēp* [Dut. *kleppen,* to creak, to crackle: Ger. *klieben,* to cleave]: in *coal-mining,* the splitting of cleavage in the seam which is transverse to the bedding.

CLEAR, n. *klēr* [F. *clair,* clear—from L. *clārus,* bright, clear: Icel. *klar,* clear, pure: Gael. *clar,* a smooth surface; *clair,* smooth surfaces]: open; free from obstruction; free from obscurity or fault; at a safe distance from danger; serene; unclouded; apparent; evident or manifest; distinct; plain; easy to understand; innocent; guiltless; free: AD. clean; quite; wholly: V. to remove an obstruction; to free from anything injurious; to remove incumbrance; to separate any foreign or foul matter; to fine; to clarify; to acquit; to purge from the imputation of guilt; to free from obscurity; to vindicate; to leap over; to make gain or profit; to become free from clouds; to become fair; to become disengaged. CLEAR'ING, imp.: N. justification or defense; a tract of land prepared for cultivation by freeing it from growing wood; among *bankers,* the exchange of notes and drafts; among *railway companies,* the exchange of tickets and equitable division of the money received for them. CLEARED, pp. *klērd.* CLEAR'ER, n. one who or that which. CLEAR'LY, ad. *-lĭ.* CLEAR'NESS, n. CLEAR'-SIGHTED, a. *-sīt-ĕd,* discerning; acute. CLEAR-SIGHT'EDNESS, n. CLEAR'ANCE, n. *-ăns,* permission by the custom-house for a vessel to sail. CLEARING-HOUSE, among *bankers* or *railway companies,* an establishment in which the values of their notes, bills of exchange, checks, railway tickets used on the lines of more than one company and the

like, are equitably adjusted, and the balances paid where due; a place in large towns where such local exchanges take place between the banks. CLEAR-STARCH, v. to stiffen with starch muslin and similar fine materials, in contradistinction to the former practice of doing up materials with a yellow starch. CLEAR-STARCHING, imp.: N. the process of doing up fine linens, etc., clear and white with starch. CLEAR-STARCHED, pp. CLEAR-STARCHER, n. one who. CLEAR HEADED, a. having a clear unclouded intellect. TO CLEAR A SHIP, to procure the requisite papers at the custom-house, and obtain permission to sail. TO CLEAR FOR ACTION, in *a ship of war*, to remove all incumbrances from the deck previous to an engagement. TO CLEAR THE LAND, among *seamen*, to gain the open sea. CLEAR-STORY: see CLERESTORY, which is the better spelling. *Note.*—Apparently the Gael. word *clar*, or *clair* indicates better than the F. and L. the origin of such phrases as '*clear* the way'; '*clear* the table'; 'a *clear* field and no favor'; 'a *clear* conscience'; '*clear* of debt'; in all which the primary idea is an unencumbered expanse or surface. See Mackay's Gael. Ety.

CLEARANCE: in the mercantile marine, a permission from custom-house officers or other officials concerned, for the departure of a vessel from a port, denoting that all the formalities have been observed, and all dues, etc., paid. A foreign vessel must also be certified by the consul of the nation to which she belongs. Hence the expression *cleared out*, in reference to the departure of a particular ship.

CLEARCHUS, *klē-ârʹkŭs:* d. B.C. 400: Spartan general. After holding various commands and employments he was sent to Thrace to protect the Greek colonies there; the ephors recalled him, but he refused to obey, and seized Byzantium. Driven thence, he entered the service of Cyrus, then gov. of Lydia, and raised 13,000 Greek mercenaries, whom he led to Babylonia on the expedition against Artaxerxes II. Clearchus alone was in the secret of Cyrus's ambitious and treasonable plans, and this he did not communicate to his followers till they had gone too far to withdraw. At the battle of Cunaxa he commanded the right wing of the Greek army, and conducted the retreat after Cyrus's death, which left them in a most dangerous situation. Accepting the invitation of Tissaphernes to a conference, he and his chief officers were treacherously seized and sent to Artaxerxes, who put them to death. Xenophon then took command and led the army to the Black Sea, as recounted in his *Anabasis*.

CLEARING-HOUSES: institutions established by banks in the larger cities to facilitate the payment of checks and drafts which they hold against each other. By exchanging the checks, only the resulting differences are paid in actual cash, thus saving the trouble, expense and risk involved in handling the enormous amounts of money represented by the checks.

The mode of procedure at the New York clearing-house practically illustrates the system. A large room, con-

taining rows of desks with spaces between the rows, and a gallery for the manager and his clerks, is provided. Shortly before 10 o'clock on each business morning two representatives from each bank appear with bags containing the checks received during the preceding 24 hours against each other bank; at the stroke of 10 the manager's bell rings and one-half of these representatives, known as *delivery clerks*, pass in orderly file in front of the desks and deliver to the others, known as *settling clerks*, who occupy the desks, the checks against their banks, done up in parcels accompanied by a list of the amounts duly totalled, and a small ticket showing the total. The settling clerks receipt for the checks upon a sheet in the hands of the delivery clerk containing the name of each bank and the amount of the checks presented. When the checks are all thus delivered, usually by 10:15 o'clock, the delivery clerks take those on their respective banks away to their offices, where they are examined and entered up just as though they had been paid over the counter. Thus the exchange is completed.

The work of settling meanwhile proceeds. The settling clerks bring to the clearing-house a sheet upon which they have previously entered the amounts of checks against each bank (*credits*), footed; a ticket showing the total of the credits is turned in to the manager's clerk before the opening; as the checks against the banks (*debits*), are delivered, the settling clerks enter the amounts in another column upon the sheets and when deliveries are completed, foot this column of debits and report the resulting totals to the manager's clerk by ticket. Accuracy is essential: hence the settling clerks before reporting the debits, scrutinize their work carefully, comparing the items on their sheets with those on the small tickets left by the respective delivery clerks.

In the manager's gallery his clerk has been busy compiling upon a four column sheet the respective total credits and debits of each bank, finding the differences between them and entering these as credit or debit balances as the case may be; the four columns of figures representing the aggregate transactions and results, are then footed. Obviously as the same items are collected and paid, the debits and credits, as also the debit and credit balances, must agree exactly. If they do not, an error has been made, and all present revise their work to find the discrepancy. When the work has been correctly done, which is usually the case, the session closes by about 10:45 o'clock. Fines are imposed upon the banks whose representatives are responsible for errors, the amount being increased as the delay caused thereby is prolonged.

The debtor banks bring to the manager's office prior to 1:30 o'clock, the amounts due in cash, and thereafter the creditor banks send for the amounts due them; proper receipts being given and taken. Obviously no cash remains in the manager's hands at close of business. In some clearing-houses balances are paid by drafts of the

manager upon debtor banks, which are either collected in cash, or 'cleared' the next day, by the creditor banks.

The economization of use of cash is shown by the reports: in the year ended 1906, September 30, the exchanges at New York amounted to $103,754,100,091; the balances paid in cash were only $3,832,621,024, an average of $3.69 per $100 of checks. This was lower than the general average from the establishment of the institution, which is $4.68 per hundred. The smaller clearing-houses show a larger average use of cash, reaching 20 per cent in many instances. There are 112 cities now employing clearing-houses; the aggregate exchanges in 1906 amounted to $157,749,328,913; the great preponderance of the business of New York is indicated by the fact that the clearings there were nearly two-thirds of the total.

Clearings are reported to the press daily, and financial journals collate them weekly, monthly and annually. The amounts are regarded a fair index of the volume of business done, hence the statistics are valuable to bankers, economists, etc.

Apparently a clearing system existed in London in the 18th century; but records go back to 1840; New York introduced it in 1853, the first in this country. The volume of business in the New York institution has for several years been larger than that of London. In the latter 'clearing' goes on all day and in some of the cities here there are two clearings daily. London also provides clearings for checks of country banks. In New York some banks and all trust companies are outsid the clearing-house membership; but most of the former and a few of the latter clear through members.

Very carefully-drawn regulations govern the relations of the members, to protect all interests. The associated banks frequently assist a bank temporarily embarrassed, but clearly solvent. In other ways also the institution promotes co-operation for the maintenance of credit. Thus in case of monetary stringency *loan certificates* are issued upon bonds or other choice collateral security, and these are used to pay balances, saving the employment of cash; the banks using them paying interest thereon. The New York Stock Exchange has for a number of years employed a system of clearing stock transactions which has materially reduced the volume of checks drawn to settle accounts.

CLEARING HOUSE, Railway: association of railway companies of England and Scotland by which they are enabled to conduct a through traffic in passengers and freight without interruption, and adjust the proportion of charges due each carrier. It is regulated by act of parliament 1850, June 25. Each company is represented on a general committee, the sec. of which adjusts and settles the balances due to and from the several companies upon reports made by them to him. The expenses of the clearing house are defrayed by the associated companies and the main offices are in London. A similar system exists in Ireland, with head-

quarters in Dublin. In the United States there is no general clearing-house, the settlements for all kinds of traffic being made directly by the companies. There is an association of New England companies, with headquarters in Boston, which is locally operated somewhat similarly to the English plan. There is also a railway-car association, with head office at Buffalo, which maintains agencies at junction points, takes the number of every car passing those points, and makes settlements for the car mileage to all the companies interested. In general the trunk lines keep open accounts with each other, and the proportion of the whole transportation charge for passengers and freight alike due from and to the different carriers is settled by the agent at junction points by the ordinary system of debits and credits and balancing checks, thus making the clearances the individual action of the companies which carry a passenger or consignment of freight from starting point to destination. For the transportation of immigrants, however, there has been established a clearing house association with headquarters in New York. It is composed of the seaboard railroad and the ocean steamship companies. Prior to its organization booking agents in foreign countries would issue orders upon some particular railroad in this country leading from Boston, Philadelphia, Baltimore, or New York, and these orders would be honored with tickets to destination. Then booking agencies were established in New York, Buffalo, Cleveland, Chicago, St. Paul, San Francisco, New Orleans, and other important points, till there are now over 7,000 such agencies in Europe and the United States, which issue orders for the inland transportation of immigrants on the railroads of the United States. The large number of these agencies, the excessive commissions charged, and the competition between the steamship lines which they represented, as well as between the railroad companies, resulted in a great many irregularities which affected the immigrant unfavorably, and more or less directly the public. About the beginning of 1886, the railroad lines running west from the seaboard organized a clearing house, the principal function of which is to make settlements between the steamship and the railroad companies, under uniform rules. In 1897, there were in the agreement 14 lines of road. New articles of agreement were adopted in 1889 which continue the association along practically the same line as before. The most important agency of the clearing house is at the port of New York, and is on Ellis Island, which has been set apart by the U. S. government for the landing of immigrants.

CLEARING-NUT (*Strychnos potatorum*): small tree of the same genus with the Nux Vomica (q.v.), abundant in the forests of India, and of which the seeds are used for clearing water. They are sold for this use in the bazaars, and travellers usually carry some with them. These seeds being rubbed on the inside of a vessel, muddy water put into it rapidly becomes clear, all impurities

settling to the bottom. The tree has a deeply-fissured bark; ovate, smooth, and pointed leaves; and a shining, black, pulpy fruit, with only one seed. The wood is very hard, and is used for various purposes.

CLEAR LAKE: in Lake co., Cal., 112 m. n. of San Francisco. It is 24 m. long, 2 to 6 m. wide; in a wild and picturesque region, formerly much resorted to by hunters and fishermen.

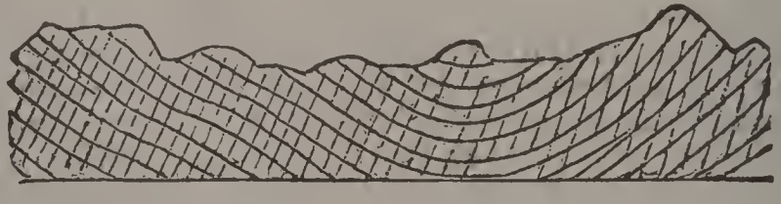
CLEARNESS: quality of art which is realized by a skilful arrangement of colors, tints, and tones. Where C. is to be obtained without sacrificing depth, a knowledge of *chiaroscuro* (q.v.) becomes indispensable.

CLEAT, n. *klēt* [Dut. *kluit*, a lump: AS. *cleot*, a plate, a clout]: a piece of wood fastened on the yard-arm of a ship to keep the ropes from slipping. There are several kinds applied to various purposes; and known as *belaying*, *comb*, *mast*, *shroud*, *single*, *stop*, *thumb*, etc., *cleats;* a piece of wood to fasten anything to; a piece of iron worn on shoes to render them more durable.

Cleat.

CLEAT, n. *klēt* [a provincial word; apparently a corruption of *cleft*]: in *coal-mining*, the splitting or cleavage in the seam which is transverse to the bedding: see CLEAP, in same sense.

CLEAVAGE, or SLATY CLEAVAGE: condition of rocks in which they split easily into thin plates. The direction of these laminæ may be in the plane of stratification, but much more frequently differs from it. C. is the result of an operation subsequent to, and entirely independent of, the original stratification of the rocks. It is im-



Section exhibiting Lines of Cleavage.

possible to determine its producing cause. By some it has been ascribed to crystaline agency, while others maintain that it arises from the pressure of mechanical forces at right angles to the planes of C., and yet others seek an explanation in a combination of these two agencies. Prof. Sedgwick, who has carefully examined the phenomena of C., has arrived at the following general results: 1. That the strike of the C. planes, when they were well developed, and passed through well-defined mountain-ridges, was nearly coincident with the strike of the beds; 2. That the dip of these planes (whether in quantity or direction) was not regulated by the dip of the beds, inasmuch as the C. planes would often remain unchanged while they passed through beds that changed their prevailing dip, or were contorted; 3. That where the features of

the country or the strike of the beds was ill defined, the state of the C. became also ill defined, so as sometimes to be inclined to the strike of the beds at a considerable angle; 4. Lastly, that in all cases where the C. planes were well developed among the finer slate-rocks they had produced a new arrangement of the minutest particles of the beds through which they pass.

C. though generally confined to clay-slate, yet sometimes occurs in lime and sandstone; but in proportion as the rocks are coarse, the C. planes become fainter and wider apart. In the fine-grained clay-slate, on the other hand, the laminæ are thin, smooth, and parallel; and as C. is always accompanied with more or less induration in the rock where it exists, clay-slate, thus altered, is of great economic value for roofing.

CLEAVE, v. *klēv* [AS. *clúfan*, to split or cleave: Ger. *klieben*, to cleave—from Ger. *kloben*, a mass or bundle: Dut. *kloue*, a cleft]: to split; to part or divide by force; to crack; to part; to open. CLEAV'ING, imp. CLOVE, *klōv*, or CLEFT, *klĕft*, pt. did cleave. CLOVEN, *klō'vn*, CLEFT, *klĕft*, or CLEAVED, pp. *klēvd*, divided by force. CLEAVER, n. *klē'vėr*, a butcher's chopper. CLEAV'ABLE, a *-ă-bl*, that may be split or parted. CLEAV'AGE, n. *-ăj*, a structure of a stratified rock, which renders it capable of being split indefinitely into thin plates; a splitting of certain rocks, as clay-slate, in a direction different from that of the plane of stratification. CLEAVAGE PLANES OF CRYSTALS, the planes into which crystals are easily split, the planes generally being parallel with one of the faces.

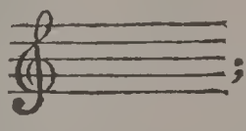
CLEAVE, v. *klēv* [AS. *cliflan*, to fasten or stick: Ger. *kleben;* Dut. *kleeven*, to stick to, to fasten; Dan. *klæbe*, to stick]: to adhere to; to stick to; to be united in interest or affection. CLEAV'ING, imp. CLEAVED, *klēvd*, or CLAVE, *klāv*, pt. did cleave. CLEAVED, pp. CLEAVERS, n. plu. *klē' verz*, goose-grass (*Galium Aparine*), a species of bedstraw (q. v.), a coarse annual, with whorls of 6–8 leaves, both stem and leaves rough with reflexed bristles, the fruit also hispid, and when ripe, very ready to adhere to any passer who may brush against it; common weed in hedges and bushy places in Britain and most parts of Europe; from time to time brought into notice as possessing a remarkable specific power over some of the most formidable cutaneous diseases, including even lichen and leprosy, also over cancer. It is administered in the form of decoction or of extract.

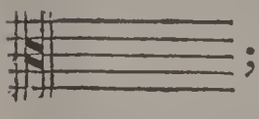
CLEBURNE, *klē'bėrn*, PATRICK RONAYNE: 1828, Mar. 17—1864, Nov. 30; b. co. Cork, Ireland; Confederate general; descendant of Wm. Clayborne, of Va. At 19 he ran away from Trinity College, Dublin, enlisted in the 41st foot, and served three years. Emigrating, 1850, he settled at Helena, Ark., studied law, and practiced it with success. Entering the southern army as a private he rose rapidly through all the grades, becoming brig.gen. 1862, Mar., maj.gen. 1862, Dec. He served with distinction at Shiloh,

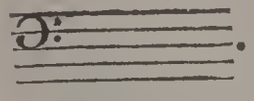
Perryville, Murfreesboro, Chickamauga, and Missionary Ridge, was thanked by the Confederate congress for the defense of Ringgold Gap, covered the retreat of Hood's army at Jonesboro, and was killed at Franklin, Tenn., after his corps had carried two lines of the Federal works. He introduced the order of the Southern Cross, urged the use of negroes as soldiers, and was honored as the Stonewall (Jackson) of the west.

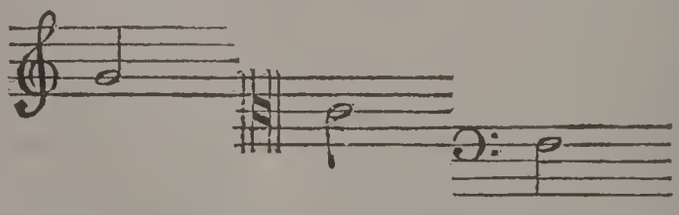
CLECHE, n. *klā'shā* [F. *clécheé*—from L. *clavis*, a key]: in *her.*, a kind of cross, charged with a similar cross of the same figure, but of the color of the field.

CLEEF, *klāf*, JAN VAN: 1646–1716; b. Venloo: painter. He was a student under Gaspard de Craeyer. Of his works, which are numerous in the churches of Flanders and Brabant, some of the best are at Ghent, where he died.

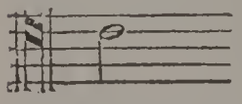
CLEF, n. *klĕf* [F. *clef*, a key—from L. *clavis*, a key]: in *a piece of music*, a figure placed at the beginning of each stave to tell its pitch, or the degree of elevation in which it is to be played or sung, and to fix the names of the notes. There are three kinds of clefs—viz.: the G, the C, and the F clef. The G clef is placed on the second line, thus:  ; the C clef on the third line, thus:

 ; and the F clef on the fourth line, thus:

 . The C clef is a fifth below the G clef, and a fifth above the F clef, thus:



The C clef is also placed on the fourth line for some instruments, and for the tenor part in vocal music, thus.

 ; and in old vocal music, the C clef placed on the first line was used for the soprano.

CLEFT, n. *klĕft* [from CLEAVE 2: Icel. *kluft;* Dan. *klöft*, a cleft]: a crack; a gap; a crevice; a fissure.

CLEG, n. *klĕg* [Gael. *cuileag*, a fly]: the gleg or horse-

fly; the glad-fly: denoting some insects of the dipterous family *Tabanidæ,* the females of which are extremely troublesome to horses, cattle, and human beings in summer, piercing their skins by means of a curious apparatus of small lancets with which the mouth is furnished, and drinking their blood. The name C. is sometimes given in England to *Chrysops cœcutiens,* a fly frequent in most parts of Europe, which frequently inserts its proboscis through the sleeve, or some other part of the dress, and thus makes man himself the object of its attack. It is about one-third of an inch in length, mostly black, with yellow markings on the abdomen, and very large eyes of the most beautiful green and golden colors. The insect always called C. in Scotland, is *Hæmatopota pluvialis*—a rather smaller fly, mostly of a gray color, but also, remarkable for its very large and beautiful eyes, which are greenish, with waved purplish-brown bands: in England, it is sometimes called the *Stout.*

Cleg (*Chrysops cœcutiens*).

CLEISTOGAMOUS, a. *klīs-tŏg'ă-mŭs* [Gr. *kleistos,* shut; *gamos,* marriage]: in *bot.,* in same sense as CLEISTOGENOUS.

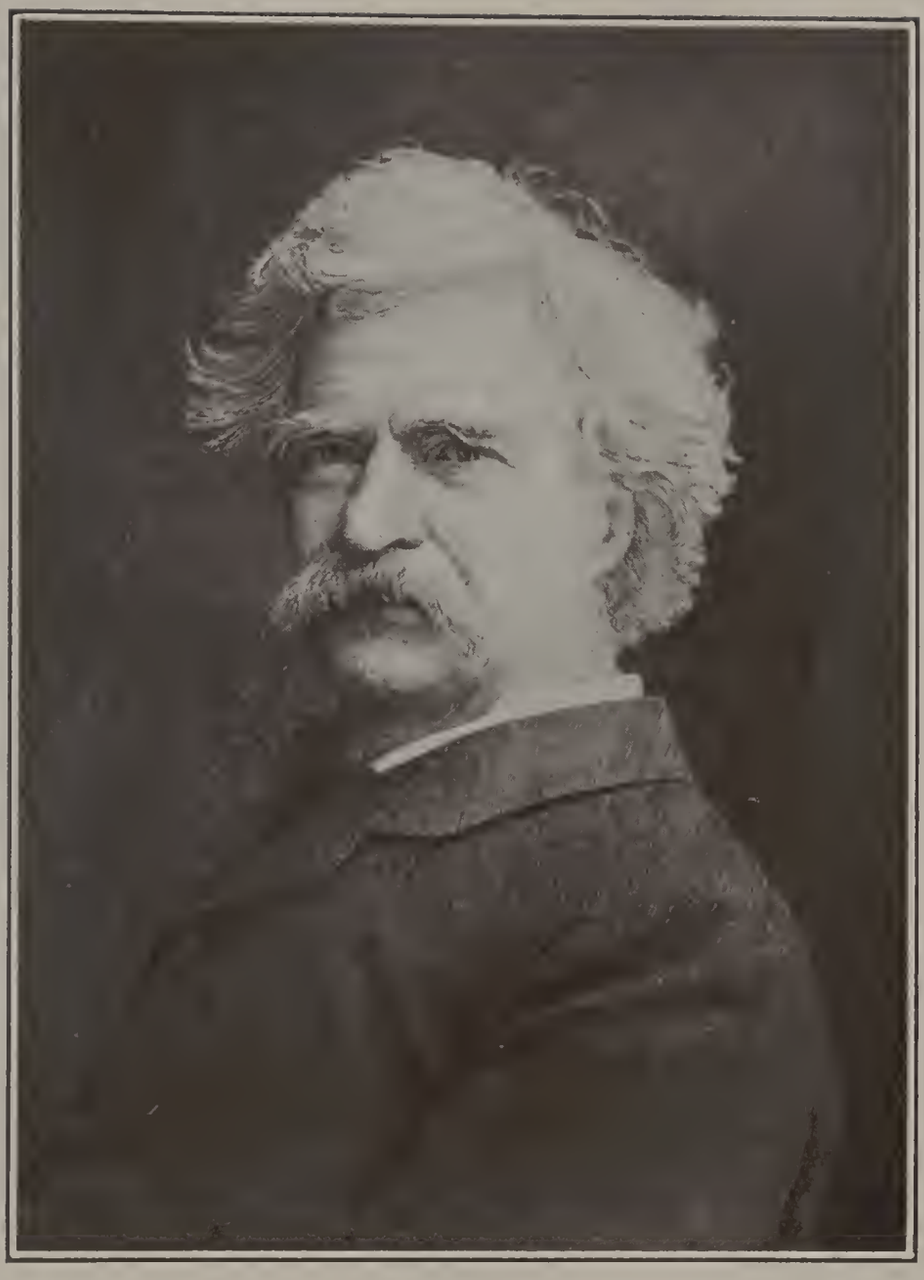
CLEISTOGENOUS, a. *klīs-tŏj'ĕ-nŭs* [Gr. *kleistos,* shut; *gĕnós,* birth]: in *bot.,* inconspicuous self-fertilized flowers, as distinguished from the large conspicuously colored ones, found on the same plant, as in the violet.

CLÉMANGES, or CLÉMENGES, *klā-mŏngzh',* NICOLAS DE· 1360—abt. 1440: mediæval reformer. He studied theology under Pierre d'Ailly, and became rector of the Univ. of Paris 1393. He sought to heal the schism between Rome and Avignon by a memoir of 1394, June 30, presented to the French king and approved by the univ. He attacked the immoralities of the higher clergy, and advised Bible-teaching as a cure for wars and disorders. He is credited not only with great eloquence and zeal, but with opinions far in advance of his time, as with questioning the spirit's guidance of the ecumenical councils; yet he placed the authority of councils higher than the pope's, and that of the Scriptures above all. At Chartres, 1421, he defended the liberties of the Gallican Church. He lectured on theology at the College of Navarre from 1425 till his death.

CLEMATIS, n. *klĕm'ă-tĭs* [Gr. *klēmătis,* a little vine-branch, a small twig]: genus of plants of the nat. ord. *Ranunculaceæ,* having four colored sepals, no corolla, and for fruit numerous one-seeded achænia with long—generally feathery—awns. The species are numerous, herbs or shrubs, generally with climbing stems, natives of very different climates, and much scattered over the world. They possess more or less active caustic properties. The long awns give the plants a beautiful appearance even in winter. The flowers also of many species are beautiful. *C. vitalba,* the common TRAVELLER'S JOY (fancifully so

named because of its ornamental appearance by the wayside), is the only native of Britain. A number of species are commonly cultivated in gardens. *C. flammula*, native of the s. of Europe and n. of Africa, with white flowers and a sweet smell, is the species known as sweet virgin's bower.

CLEMENS, Samuel Langhorne (pen name, Mark Twain): author; b. Florida Monroe co., Mo., 1835, Nov. 30. He received a village-school education; learned the printing business and worked at the trade in Hannibal, Mo., and as journeyman printer in the East; became a pilot on Mississippi river steamboats 1855; went to Nevada 1861, and was appointed city editor of the *Enterprise* at Virginia City 1862. In 1865 he served several months as reporter on the *Morning Call* at San Francisco and as a placer miner in Calaveras co., Cal.; 1866 made a trip to the Sandwich Islands, and returning to San Francisco delivered several humorous lectures in Cal. and Nev., and removed to New York to bring out his first book. In 1867 he accompanied a party of tourists to the Mediterranean, Egypt, and the Holy Land, and based his second book on the real and fancied experiences of the journey. Subsequently he settled in Buffalo, N. Y., became editor of the *Express*, married and then removed to Hartford, and lectured in the principal cities. At Hartford, he wrote *Roughing It* (1872), *The Gilded Age* (in co-operation with Chas. Dudley Warner, 1873), *A Tramp Abroad* (1880), *Life on the Mississippi* (1883), *A Connecticut Yankee at the Court of King Arthur* (1889), *The Prince and the Pauper* (1880), *Tom Sawyer* (1876), *Huckleberry Finn* (1885), *The American Claimant* (1892), etc. He was a frequent contributor to *The Atlantic Monthly*, in which some of his work was first published serially. He made several sojourns abroad, in England, Germany, and Italy; in 1884 became an active partner in the publishing house of Charles L. Webster & Co., of New York, and subsequently assumed the principal management of the concern. The enterprise proving disastrous he became very heavily involved, to the extent, it is claimed, of more than $100,000, all of which he has since paid. Following the failure of the publishing house he made a tour of the world, lecturing in all the principal countries, where he was received with such generous appreciation that he was enabled to pay the last of his debts soon after his return to America. His other works include, *The Jumping Frog* (1867); *The Innocents Abroad* (1869); *Autobiography and First Romance* (1871); *Sketches New and Old* (1873); *Punch, Brothers, Punch* (a skit suggested by an anonymous humorous poem) (1878); *The Stolen White Elephant* (1882); *Merry Tales* (1892); *The* £1,000,000 *Bank Note* (1893); *Puddinhead Wilson* (1894); *Tom Sawyer Abroad* (1894); *Joan of Arc* (1896); *Following the Equator* (1898); *The Man that Corrupted Hadleyburg* (1900);



SAMUEL LANGHORNE CLEMENS.

*A Double-Barrelled Detective Story* (1902); *Adam's Diary* (1914); *Eve's Diary* (1906). He has contributed many stories, sketches, and articles to *The Century Magazine, Harper's Monthly, Harper's Weekly,* and the *North American Review.*

CLEMENS, *klē'mĕnz,* TITUS FLAVIUS (CLEMENS ALEXANDRINUS), one of the 'fathers' in the Christian Church, at the close of the 2d and beginning of the 3d c.; b. prob. at Athens; d. between 213 and 220. He resided during the greater part of his life in Alexandria, whence the epithet *Alexandrinus.* In his earlier years he applied himself with great zeal to the study of philosophy. His love of knowledge induced him to visit Greece, Italy, Syria, Palestine, and other countries. It is not known precisely when he was converted from heathenism; but it is certain that after coming to Egypt, and listening to the prelections of Pantænus, he joined the Alexandrine Church, and was made a presbyter. Afterward he became assistant to his master, who held the office of *catechist.* In 202, the persecution of the Christians under Severus compelled him to flee to Palestine. He is supposed to have returned to Alexandria about 206, and in 211 succeeded Pantænus.

CLEMENS ROMANUS, *klē'menz rō-mā'nus.* Bishop of the Church in Rome (CLEMENT I in Rom. Cath. list of popes), one of the apostolical fathers. Origen considered him the Clement mentioned by the apostle Paul, Phil. iv. 3. Tertullian thought him the first bishop of Rome, ordained as such by St. Peter; Irenæus made him the third, and he is supposed to have been preceded by Linus and Cletus or Anacletus. Eusebius places his episcopate at 93–101. Nothing is known of his death; only fictions of late origin represent him as a martyr.—The only writing assigned with probability to Clement is the epistle from the Church of Rome to that of Corinth exhorting to a peaceful and orderly course. The earliest mention of this is in a letter from Dionysius, Bishop of Corinth, to Soter, Bishop of Rome, 166–174; it is here ascribed to Clement, and all later testimony favors his authorship; the conjectural date usually given is 96 or 97, though some say 68. Some critics have denied its genuineness and placed it some decades later; others, with no better reason consider a few chapters interpolations. One leaf of the MS. was lacking, and the epistle is thus far imperfect. Clement of Alexandria often cited it as the work of the 'apostle Clement,' and seemed to place it on a par with the New Test. Scriptures. It was greatly honored in the early church, and not undeservedly; several ancients say it was read in the Sunday services. The best edition is that of Prof. Lightfoot (1869). Some have considered Clement the writer of the canonical epistle to the Hebrews, and several documents have been erroneously ascribed to him. 1. A second epistle to the Corinthians, found with that of Clement at the end of the *Codex Alexandrinus:* it originated probably in Egypt about 180. 2. Two letters on Virginity, found in a Syriac text. 3. The so called Clementine *Rec-*

*ognitions and Homilies*, the probable date of which is about 200. 4. The *Apostolical Constitutions*, of various though early origin.

CLEMENT, a. *klĕm′ĕnt* [F. *clément*, gentle, mild—from L. *clemen tem*, mild, merciful: It. *clemente*]: mild, gentle in disposition; kind; merciful; tender. CLEM′ENCY, n. *-ĕn-sĭ* [F. *clémence*]: mildness in temper and disposition; gentleness; mercy; disposition to forgive or to spare. CLEM′ENTLY, ad. *-lĭ*, in a mild and merciful manner.

CLEMENT I. Pope: See CLEMENS ROMANUS.

CLEMENT II., *klĕm′ĕnt* (SUIDGER, a Saxon, Bp. of Bamberg), Pope: d. 1047, Oct. 9. Having been canon of Halberstadt, chaplain to the Abp. of Bremen, and chancellor to Henry III., by the influence of this patron he succeeded Gregory VI. 1046, Dec. He crowned Henry emperor, held a council which passed decrees against simony, and died at Pesaro, poisoned, as was supposed, by Benedict IX.

CLEMENT III. (PAULINO SCOLARI, a Roman, Bishop of Prænestе), Pope: d. 1191, Ma. He was elected 1187, Dec. 19, and entered Rome 1188, Mar. 13. Here he quieted longstanding disorders by allowing citizens to elect their magistrates, while he retained the nomination of the governor of the city. He proclaimed the third Crusade, against the Saracens, who had taken Jerusalem, and introduced some small reforms. Another Clement III., antipope, 1080-99, was Guibert of Parma, Abp. of Ravenna. He was obtruded by Henry IV., and kept in authority over the imperial provinces while Gregory VII., Victor III., and Urban II. were the legitimate popes, though he had been expelled from Rome, 1089, and had sworn to renounce his claim. He died at Ravenna 1100.

CLEMENT IV. (GUI FOULQUES, of Languedoc, Abp. of Narbonne), Pope: d. 1268, Nov. He had been a soldier lawyer, and sec. to Louis IX. of France; after his wife's death he took orders and became Bishop of Puy, Cardinal-Bishop of Sabina, and papal legate in England. Elected against his will, 1265, he went to Rome in disguise, being in danger from Manfred, of Naples, and called in the aid of Charles of Anjou, who soon overthrew Manfred. Clement has been unjustly accused of advising his ally to put to death the heirs of the Swabian prince. He signed the pragmatic sanction which ended the dispute between Rome and France, and rejected a reformation of the calendar proposed by Roger Bacon, whom, however, he befriended. Clement was a man of high character, and a foe of nepotism. He lived during his pontificate at Viterbo, and died there.

CLEMENT V. (BERTRAND DE GOTH, Abp. of Bordeaux), Pope: abt. 1264-1314, Apr. 20. He had been bishop of Comminges, 1295-99, and a partisan of Boniface VIII.: raised to the papal chair 1305, June 5, after 11 months' vacancy and long disputes between the French

and Italian cardinals, his uniform subserviency to Philip the Fair gave color to the report of a bargain which secured his election. Having created nine French cardinals, he (with some excuse in the disturbed condition of Italy and Rome) removed the seat of papacy, 1308, to Avignon, and began what Petrarch called the Babylonish captivity. He is memorable chiefly for this, and for his bull, 1311, suppressing the Templars, which Philip executed with scandalous greed and flagrant cruelty. At the council of Vienne, 1311-12, he acquitted his predecessor's memory of the charge of heresy, founded a few chairs in the universities, and offered some encouragements to study. He opposed Henry VII. in his march through Italy, put down the heresy of Fra Dolcino in Lombardy, and issued the Clementine Constitutions 1313. He was the first pope to assume the triple crown. He died at Roquemance, in Languedoc.

CLEMENT VI. (Pierre Roger, of Limousin, Abp. of Rouen), Pope: d. 1352, Dec. 6. He had been a Benedictine monk, Bishop of Arras, and chancellor to Philip of Valois. Elected 1342, May 7, he remained at Avignon, declining the entreaties of Petrarch and Rienzi to come to Rome. Rienzi went back as the pope's prothonotary, and soon became tribune, while Petrarch praised the culture, eloquence, and generosity of Clement. He bought Avignon, 1348, from Joanna of Naples, and paid for it (in lieu of 80,000 crowns) by absolving her for the murder of her husband. He ordered the jubilee to be celebrated every 50 years instead of every century, renewed the excommunication of the emperor Louis of Bavaria, quarrelled with Edward III. of England about benefices, and took some steps toward reunion with the Eastern Church.

CLEMENT VII. (Giulio de' Medici, Abp. of Florence),. Pope: abt. 1475-1534, Sep. 25 A nephew of Lorenzo the Magnificent, he had been knight of Malta, grand prior of Capua, and chief minister of his cousin, Leo X., at whose death, 1522, he procured the election of Adrian VI. as a stop-gap. Gaining the papal chair, 1523, Nov., he joined his neighbors in a league with France; a vacillating policy incurred the wrath of Charles V., and Rome was assaulted and sacked, 1527, May 5, by the mercenaries of the constable Bourbon. Clement took refuge in the castle of San Angelo, which he soon surrendered, and was a prisoner for six months; to regain his liberty, he gave up several strongholds, and five cardinals as hostages. After this he was controlled by the emperor, whom he crowned, 1530, at Bologna. His efforts to check the progress of the Reformation in Germany met no great success; his refusal, 1534, Mar. 23, to dissolve the marriage of Henry VIII. with Catharine of Aragon was anticipated by the bill abolishing the pope's authority in England, which received the king's assent Mar. 30; the bull of May widened the breach. Clement married his niece Catharine de' Medici to the Duke of Orleans, second son of Francis I., at Marseilles,

1533. His character was decent, but weak and timid; his diplomatic cunning was useless in the political and religious convulsions of that period. Though of high reputation as a cardinal he was not a man to shape or resist the course of such events, and no legitimate pope endured greater humiliations and reverses.—A previous Clement VII., antipope, was Robert of Geneva (abt. 1342-94), Bp. of Cambrai and legate of the Romagna, where he ruled savagely by help of the free lances of Malestroit and Hawkwood. Elected at Fondi, 1378, by 12 French and four Italian cardinals, who disowned Urban VI., he inaugurated the schism of Avignon, was acknowledged for a time by Naples, Aragon, Castile, and France, and kept his state during five years of Boniface IX., till the attack of Clémanges (q.v.), backed by the Univ. of Paris and even his own cardinals, brought on a fatal illness.

CLEMENT VIII. (Ippolito Aldobrandini), Pope: 1536-1605, Mar. 3; b. Fano. He was of noble Florentine family, and had been auditor of the rota and referendary of Sixtus V. He succeeded Innocent IX., 1592, Jan. 30, and refused to acknowledge Henry IV. of France till that prince was reconciled to the church and absolved, 1595, after long negotiations, conducted by Cardinal D'Ossat. He mediated the peace of Vervins, 1598, between France and Spain, and restrained these powers from another war, 1600. He added Ferrara to the papal dominions, 1598, but failed to make Venice dependent; his main political object was to escape the undue influence of Spain. He promoted learning, crowned Tasso, and made Baronius, Bellarmin, and Du Perron cardinals. On the controversy about grace and free will, raised by Molina's writings, he declined to decide. Clement was of high private and official character; his able reign is marked by the number and beauty of his medals, and defaced by no serious blot, except the burning of Giordano Bruno (q.v.), 1600, Feb. 17. His death was ascribed to the Jesuits, whom he had not favored. An earlier Clement VIII., antipope, was Gil Muñoz, canon of Barcelona, who disputed the papacy with Martin V. He was installed at Peniscola 1424, but abdicated 1429, ending the schism of 51 years, and was made Bishop of Majorca.

CLEMENT IX. (Giulio Rospigliosi), Pope: 1600-69, Dec. 9; b. Pistoia. He had been auditor of legation in France, nuncio in Spain 11 years, and sec. of state under Alexander VII., whom he succeeded 1667, June 20. He appeased the controversy between Jesuits and Jansenists, improved the Roman finances, tried vainly to procure aid for Venice against the Turks, who had laid siege to Candia, capital of Crete, and died of grief when it was taken.

CLEMENT X. (Emilio Altieri), Pope: 1590, July 13—1676, July 22; b. Rome. He had been cardinal but five months when he succeeded Clement IX. 1670, Apr. 29. Old and infirm, he gave up the administration of affairs to a nephew, who engaged in a controversy with

France concerning benefices and revenues. Christina of Sweden attended his jubilee 1675.

CLEMENT XI. (Giovanni Francesco Albani), Pope: 1649, July 22—1721, Mar. 19; b. Pesaro. He became cardinal 1690, and succeeded Innocent XII., 1780, Nov. 23. He was a man of blameless character, a scholar, and a patron of letters, but his pontificate was rather disastrous. His support of Louis XIV. in the war of the Spanish succession caused an invasion of his territories by the imperial troops; he was forced to recognize Charles of Austria as king of Spain, lost his hold on Sicily, Sardinia, Parma, and Piacenza, and retained few friends beyond the king of Portugal and the English Pretender, who lived at Rome from 1717. By the bull *Vineam Domini*, 1705, he condemned the five propositions of Jansen, and by that called *Unigenitus*, 1713, 101 from Quesnel. The French parliaments refused to register the latter bull, and troubles of long standing ensued. On the other hand, the Jesuit missionaries in China, who liked to manage matters in their own way, resisted his prohibition of their practices of accommodation and conciliation, in suiting their language to their hearers, and participating in heathen rites. Clement added much to the vatican library, and founded an academy of the fine arts at Bologna.

CLEMENT XII. (Lorenzo Corsini, Bp. of Frascati), Pope: 1652, Apr. 7—1740, Feb. 6; b. Florence. He became cardinal 1706, succeeded Benedict XIII. 1730, July 12, and at once tried and punished Cardinal Coscia for malversation in the last reign. His own was troubled by Italian wars and foreign complications. He held three jubilees, improved the Roman police, promoted arts and sciences, founded in Calabria, 1734, the Corsini seminary for young Greeks, and was the first pope to condemn the Freemasons.

CLEMENT XIII. (Carlo Rezzonico, Bp. of Padua), Pope: 1693, Mar.—1769, Feb. 3; b. Venice. He was made cardinal 1737, bishop 1743, and pope 1758, July 6, succeeding Benedict XIV. He was embroiled with the Bourbons about Parma, and with all the southern and western powers about the Jesuits, who took refuge at Rome on their expulsion from Portugal, France, Spain, Naples, Sicily, Parma, and Malta. He confirmed their privileges by the bull *Apostolicam*, 1765, but under continued pressure for their suppression had summoned a consistory, when he died suddenly, by poison, as was supposed.

CLEMENT XIV. (Giovanni Vincenzo Antonio Ganganelli), Pope: 1705-74, Sep. 22; b. St. Arcangelo, near Rimini, where his father was a physician. At the age of 18, he entered the order of Minorites, and studied philosophy and theology, which he then successfully taught. His merits were appreciated by the keen-sighted Benedict XIV., who appointed him to the important post of counsellor to the inquisition, and under Clement XIII. he was made a cardinal. On the death of Clement XIII. he

succeeded to the papal chair, 1769, May 19. No pope had ever been elected under greater difficulties. The kings of Portugal, France, Spain, and Naples were at variance with Clement, chiefly on account of his support of the Jesuits; Venice wished to reform the religious orders without his interference; Poland was seeking to diminish his influence; the Romans themselves were discontented. Clement first set about reconciling the monarchs; he sent a nuncio to Lisbon, suspended the bull *In Cœna Domini*, and entered into negotiations with Spain and France. After several years of negotiation, he issued, 1773, the famous brief *Dominus ac Redemptor noster*, suppressing 'for ever' the society of the Jesuits. The motive assigned in the brief is, 'regard to the peace of the church.' Clement, whose lot was cast in troublous times, and to whom it seemed providentially appointed that he should meet insurmountable obstacles and deal with irreconcilable elements, was remarkable for liberality and nobleness of mind, address as a statesman, sound learning, and mildness of character. He cherished the arts and sciences, and was the founder of the Clementine museum, which, by the additions of Pius VI. and Pius VII., became the chief ornament of the Vatican.

CLÉMENT, *klā-mŏng'*, Jacques: 1565-89, Aug. 1; b. Sorbon, near Rheims; assassin of Henry III. of France. A Dominican monk, he shared the fanaticism of the League, and was encouraged in his project by his prior Bourgoing, and by a voice at night calling on him to free his country from a tyrant. The Duchess of Montpensier is said to have promised him canonization if he perished, or a cardinal's hat if he escaped. Having fasted and taken the sacrament, he went to St. Cloud, and was found asleep with his breviary lying open at the murder of Holofernes by Judith. Next morning he was admitted as a bearer of dispatches from Paris, and stabbed the king as Henry was looking at the letter he had offered. He was at once cut down by two courtiers, and his body drawn to the place of execution and burned. The earth which had received his blood was collected, his image placed on altars, and his memory revered as that of a martyr and saint: Sixtus V. pronounced his eulogy before the cardinals, comparing him to Judith and Eleazar.

CLEMENT of Alexandria. See Clemens Romanus.

CLEMENTI, *klā-mĕn'tē*, Muzio: 1750 (or 1752)-1832, Mar. 10; b. Rome; pianist and pianoforte composer. His skill on the pianoforte when only 13 years of age secured for him the notice of a Mr. Beckford, an English gentleman travelling in Italy, with whom Clementi went to England, and in whose family he remained for several years, studying the great composers, and where he also acquired an extensive knowledge of literature. His 'Opera 2' (composed in his 18th year) is considered the model on which modern pianoforte sonatas have been founded. Clementi

obtained in England the highest reputation as a teacher. Pecuniary misfortunes induced him, 1800, to commence business as a music-seller and manufacturer of pianofortes. He died in London. His compositions, mostly pianoforte sonatas, are full of pleasant melody, and arranged in masterly style. For students his classical *Introduction to Pianoforte Playing*, and his last work, the *Gradus ad Parnassum*, have been highly recommended.

CLEMENTINES, *klĕm'en-tīnz:* a body of constitutions and decrees put forth by Pope Clement V. (q.v.) 1313. They were proclaimed by John XXII. 1317, and copies sent to the univs. of Bologna and Paris. They appeared in a folio volume at Mentz 1460; and in the *Corpus Juris Canonici* they form 5 books and 52 titles. The name is given also (more properly Pseudo-Clementinas) to the *Homilies* and *Recognitions* formerly ascribed to Clemens Romanus, and really produced about 200. They have been edited by Schwegler (1847) and others.

CLEMMER, *klĕm'mėr*, Mary (Mrs. Hudson): 1839-84, Aug. 18; b. Utica, N. Y.: journalist and author. She was educated at Westfield, Mass. At an early age she wrote for the Springfield *Republican*, and married the Rev. Daniel Ames, from whom she was divorced. Her house in Washington was long a literary and social centre, and her *Woman's Letters* appeared for many years in the N. Y. *Independent*. She wrote the lives of her friends Alice and Phœbe Cary; monographs on Charles Sumner, Margaret Fuller, George Eliot, Emerson, and Longfellow; three novels, *Victoria* (N. Y. 1864), *Eirene* (1870), and *His Two Wives* (1874); *Ten Years in Washington* (1871), and *Outlines of Men, Women, and Things* (1873). Her poems appeared at Boston, 1882. She married, 1883, Edmund Hudson, conductor of the *Army and Navy Register*, who wrote a memorial of her, 1886. She died in Washington.

CLENCH, v. *klĕnsh:* for Clinch, which see. Clench-bolts, in *a ship*, those clenched at the ends where they come through. Clench-nails, those which will drive without splitting the board.

CLEOBULUS, *klē-ō-bū'lŭs:* one of the seven sages of Greece. He was a son of Evagoras; and, B.C. 6th c., ruled his native town, Lindus in Rhodes, either as king or as head of a republic. He was eminent for physical strength and beauty, as well as for the wisdom and acuteness show in his songs, riddles, and sayings; some of the latter praise moderation, fortitude, and friendship. Cleobulus is credited with believing in the higher education of women.

CLEOMEDES, *klē-ō-mē'dēz:* Greek writer on astronomy. Nothing is known regarding his life or date. His treatise is entitled *The Circular Theory of the Heavenly Bodies*, and is remarkable as containing, amid much error and ignorance, several truths of modern science—such as the spherical shape of the earth, the revolution of the moon

about its axis, its revolution round the earth, etc. Cleomedes's treatise was printed first in Latin by Geo. Valla (Ven. 1498); in Greek, by Conrad Neobarius (Par. 1529). The two latest editions are those of Janus Bake (Lugd. Bat. 1820) and C. C. T. Schmidt (Leip. 1832).

CLEON, *klē'on:* Athenian demagogue, who lived during a part of the Peloponnesian war; originally a tanner, but having a strong bias toward politics, he gradually abandoned his business, and became the champion of popular 'rights.' He first became prominent in the discussion regarding the fate of the Mytilenæan prisoners, B.C. 427. Cleon advocated the massacre of the males, carried his point, and more than 2,000 perished; the rest were saved through the remorse of the Athenians. In B.C. 425, with Demosthenes, he commanded an expedition against the island of Sphacteria, which was garrisoned by the Lacedemonians, and, much to the surprise of every one, succeeded in reducing the place; but the whole merit of this deed is usually attributed to his colleague. Cleon himself, however, was highly elated with his success, and his countrymen, or at least many of them, appear to have fancied that he really possessed military genius, for in B.C. 422 he was sent to oppose Brasidas, the Spartan general, in Macedonia and Thrace. On his way thither, he took Torone, a town in which Brasidas had left a small garrison, and afterward Galepsus. But the great design of the campaign was the capture of Amphipolis, where Brasidas was stationed. Cleon somewhat reluctantly advanced, and began to reconnoitre. While he was so doing, Brasidas made an unexpected sally, and in the battle which ensued both leaders were slain. The Athenian army, however, was defeated, and obliged to retreat. The general opinion of Cleon is not favorable. He is depicted by Thucydides and Aristophanes as an ignorant, vain, blustering, and cowardly *mobocrat.* Most modern historians have accepted this estimate of the man; but Grote, in his *History of Greece,* has thrown doubt on its truth, and has labored to show that he was the rough but resolute champion of the people, and that his character has been vilified and abused by Aristophanes, who was—there can be no doubt—violently aristocratic.

CLEOPATRA, *klē-ō-pā'tra,* Queen of Egypt: B.C. 69—B.C. 30, Aug.; daughter of the Egyptian king, Ptolemy Auletes. According to the will of her father, she should have inherited the throne with her brother, Ptolemy Dionysus, who was also her husband. Her claim, however, being opposed, Julius Cæsar came to Alexandria, B.C. 48, to interpose in the quarrel, and in the Alexandrian War, Ptolemy Dionysus fell, and Cleopatra, who was now married to her younger brother, Ptolemy, a boy of eleven years, was established upon the throne of Egypt. She bore a son to Cæsar, who was named Cæsarion. On her visiting Rome, Cæsar received her with great magnificence, and

placed her statue in the temple which he had built to Venus Genitrix. In the civil war, after Cæsar's assassination, Cleopatra at first hesitated which side to take. After the battle of Philippi, Antony summoned her to appear before him at Tarsus, in Cilicia, to give account of her conduct. Cleopatra, who had in the meantime rid herself of the youthful Ptolemy by poison, appeared in the character of Venus Anadyomene, and so fascinated Antony, that he ever afterward remained devoted to her. They spent the winter, B.C. 41-40, in Alexandria, in revelry; and Antony, though he had in the meantime married Octavia, sister of Octavianus, returned to the embraces of Cleopatra, who met him at Laodicea, in Syria, B.C. 36, and accompanied him to the Euphrates. His general residence from this time was with her at Alexandria. He bestowed upon her and upon her children great estates, which, however, he had no right so to dispose of. Upon this and other accounts he became the object of great detestation at Rome, and war was declared against Cleopatra, Antony being now regarded as her general. At her instigation, he risked the great naval battle of Actium (q.v.); and when she fled with 60 ships, he forgot everything else, and hastened after her. When Octavianus appeared before Alexandria, Cleopatra entered into private negotiations with him for her own security, which treachery becoming known to Antony, he vowed revenge; but a report coming to him that she had committed suicide, he thought it impossible to survive her, and fell upon his sword. Mortally wounded, and learning that the report which he had heard was false, he caused himself to be carried into her presence, and died in her arms. Octavianus, by artifice, succeeded in making her his prisoner. Failing to make any impression upon him, and finding that he spared her life only that she might grace his triumph at Rome, she took poison, or, as is said, killed herself by causing an asp to bite her arm. Her body was buried beside that of Antony, and Octavia brought up the children whom she had born to Antony as if they had been her own. For *Cleopatra's Needle* see OBELISK.

CLEPE, v. *klēp* [AS. *cleopan* or *clypian*, to call; to speak: Scot. *clep*, to tattle: Dut. *klappen*, to tattle, to chatter]: in *OE.*, to call; to name; same as YCLEPE.

CLEPSYDRA, n. *klĕp'sĭ-dră* [L.—from Gr. *klepto*, I steal, and *(h)udor*, water]: a water-clock; an anc. instrument in which time was measured by the gradual dropping of water through a small orifice. Two kinds have been in use—one wherein the fluid is simply allowed to escape through the orifice; the other, in which the uniformity of the flow is secured by maintaining the fluid at a constant level in the instrument. The first would, like a sand-glass, give only an accurate measure of the time occupied in the escape of the whole fluid; of a shorter time, it would be an inaccurate measure, as the pressure under which the escape

takes place at the commencement is greater than at any instant thereafter, and constantly diminishes with the height of the fluid column. In the second, the flow must be nearly uniform; and if the water be received into a uniform graduated tube as it escapes, the instrument would be a moderately good clock. The rate of the flow, however, is affected by temperature and barometric pressure. The C. is supposed to have been used among the Chaldeans. The Romans employed it extensively. The invention of the pendulum superseded it.

CLEPSYDRA was the name also of an anc. Greek musical instrument, described by Athenæus as having pipes which were made to produce a soft sound by the agitation of water forcing air into them. There were levers for admitting the water, thus forming a kind of hydraulic organ.

CLEPTOMANIA, n. *klĕp-tō-mān′-i-ä* [Gr. *klepto* to steal, and *mania*]: Cleptomania forms one of a group of strong and, it may be, irresistible impulses associated with nervous weakness, instability, or positive disorder. Such abnormal impulses (the tendency to throw oneself from a height, to use obscene language, or shock the proprieties, to set things on fire, to indulge in cruelty) are associated with irregularities of development of the nervous system and thus appear characteristically in adolescent hysteria, and in other and related troubles of the nervous system. Such appropriation is often of an automatic character and in some cases the action leaves no trace in the memory. Yet again the habit is compatible with a shrewdness of execution as well as concealment of the theft. It doubtless has relation to the natural human impulse to possess, collect and acquire. The conspicuous character of cleptomania is due to the fact that the impulse leads the offender into legal complications, and at once raises the question of criminality. Nothing but a complete diagnosis of the case with all its attendant personal and social circumstances will warrant a decisive opinion except, in very simple and pronounced types. Yet attention may be directed to the fact that in cleptomania the articles may be of trifling value, that there may be no reason (such as poverty, temptation) for the act; that it is openly performed, and even clumsily; that it may be confined to a special set of articles of no intrinsic value, while in all other respects the offender is honest. Yet more significant are the other morbid symptoms (such as deceitfulness, liability to periodic seizures, to fits of temper, hereditary taints, etc.) and the confinement of the trait to periods of strain, mental or physical (pregnancy, grief, excitement). The older notion that cleptomania is to be regarded as a disease must be abandoned in favor of the conception that it is but one of the general symptoms of nervous instability or disorder. See HYSTERIA; MANIA; PHOBIA.

CLERC, *lėh klär*, JEAN LE, better known as JOHANNES CLERICUS: 1657, Mar. 29—1736, Jan. 8; b. Geneva, where his father was a clergyman. From an early age he showed particular aptitude for the study of ancient languages, and

in this department he is still a conspicuous name. He gave great attention also to theology, and his numerous controversial writings brought him repute during his lifetime. Before he was 20 years old Clerc had imbibed heterodox opinions in religion. In 1678, he went as tutor to Grenoble, where he remained two years; in 1680, he returned to Geneva, and was appointed to the clerical office. All the while, his objections to the accepted theology of the day had been growing: the works of Curcellæus and of Episcopius confirmed this antipathy, and now he appeared as Liberius de St. Amore, the writer of eleven Letters against the Errors of the Scholastic Theologians—in short, as the partisan of the Dutch Remonstrants. In the latter part of 1681, Clerc left Saumur, whither he had gone to perfect his French, went to Grenoble, and thence to London, where he preached six months to the Savoy congregation. Finally, he was appointed Prof. of Philosophy, Classical Literature, and Hebrew at the Remonstrant seminary of Amsterdam, Clerc's writings are very numerous; but his greatest service to posterity was the publication of a quarterly, the *Bibliothèque Universelle et Historique* (1686-93, 25 vols. 8vo), followed up by the *Bibliothèque Choisie* (1703–13), and the *Bibliothèque Ancienne et Moderne* (1714-27). Other works of Clerc's are—*Harmonia Evangelica* (1700); *Traduction du Nouveau Testament avec des Notes* (1703); *Ars Critica* (3 vols. 1712–30; and *Traité de l'Incrédulité* (1733). The first two are Socinian in their tendency. Clerc's rationalism is still more manifest in a work entitled *Sentimens de quelques Théologiens de Hollande touchant l'Histoire Critique du Vieux Testament,* in which the special inspiration of the Scriptures is denied. His editions of several of the ancient classics show his learning and acumen.

CLERC, *klär,* Laurent: 1785, Dec. 26—1869, July 18; b. La Balme, near Lyon, France: deaf-mute teacher. His father was mayor of the commune 34 years. When a year old he lost the sense of hearing and smell from a fall into the fire. At 12 he was placed under the Abbe Sicard in Paris, and learned rapidly; at 20 he was made tutor, and proved efficient and successful. Meeting Dr. Gallaudet in England, 1815, he accompanied him to America the next year, and joined him in opening the deaf and dumb asylum at Hartford 1817, Apr. 15. To the success of this institution he largely contributed, and trained most of the teachers who went out from it. He married one of his pupils, Miss Boardman, 1819; their children speak and hear. He retired on a pension 1858, and died at Hartford.

CLERESTORY or Clearstory, n. *klēr'stō-rĭ* [F. *cléristère;* by others, F. *clair,* clear, bright, and Eng. *story,* a *flat*]: an upper story or row of windows in a church rising *clear* above the arches of the nave and the adjoining parts of the buildings. Clerestorial, a. *klēr-stō'rĭ-ăl,* pert. to. Originally this term was applied generally to the upper part of any building lighted by several windows, or by a row of small windows or openings in the wall. Latterly,

it came to be applied exclusively to the upper part of the central aisle of a church, in which windows were found above the roof of the side aisles. The object of the Clerestory in churches appears to have been to increase the light in the nave, but the windows in existing churches are usually so small as to effect this object very imperfectly. In many churches, the Clerestory is a subsequent construction; added when the high-pitched roof, which included the side aisles in its span, gave place to one more nearly flat covering the nave only. The walls over the arches of the nave were then raised so as to receive the Clerestory windows. See GOTHIC ARCHITECTURE.

CLERGY, n. *klėr'jĭ* [F. *clergé;* OF. *clergie*—from mid. L. *clĕricus*, a clerk or clergyman: Sp. *clerigo;* It. *clerico*, one of the clergy—from Gr. *klēros*, a lot or inheritance]: the body of men set apart to conduct the service in a Christian Church; ministers of the Established Church of a country. CLER'GYMAN, n. a man in holy orders; a minister of the Christian religion. CLERICAL, a. *klĕr'ĭ-kal* pertaining to the clergy—also CLER'IC, a. *-ĭk:* N. a man in holy orders; a clergyman. BENEFIT OF CLERGY, an anc. privilege by which clergymen, and subsequently all who could read, were in certain cases exempted from criminal prosecutions. CLER'GYABLE, a. *-ă-bl*, applied to felonies within the benefit of clergy.

CLERGY: term generally applied to the ministers of the Christian religion, in contradistinction to the *Laity* (q. v.) This use of the term is very ancient, and appears to have gradually become prevalent, as the ministers of religion more and more exclusively, instead of all members of the Christian Church equally, began to be regarded as God's 'heritage' and 'priesthood' (1 Pet. ii. 9; v. 3), consecrated to God, and peculiarly his. The distinction between the clergy and the laity became more marked through the multiplication of offices and titles among the clergy, the ascription to them of a place in the Christian Church similar to that of the priests and Levites in the Jewish Church, involving not only special duties and honor, but also peculiar rights and privileges, their assumption of a peculiar dress and of official insignia, the growth of monastic institutions, and the introduction of celibacy. In harmony with the notions on which this distinction is founded, is that of an indelible or almost indelible character derived from ordination, so that a renunciation of the clerical office is viewed as either an impossibility, or a sort of apostasy. These notions in their highest degree belong to the Church of Rome. In the Protestant churches, the distinction between clergy and laity is much less wide; and though the same terms are often used, it is rather conventionally than in their full signification. The employment of official robes by the clergy preceded their assumption of a peculiar ordinary dress, and is not so intimately connected with any peculiar pretensions. Among the privileges accorded to the clergy by the Roman emperors, and in the middle ages, was exemption from civil

offices; among the rights asserted by them, and which caused much dispute, was exemption from lay-jurisdiction even in cases of felony: see BENEFIT OF CLERGY. The clergy were distinguished into the *higher clergy* and the *lower clergy*, the latter including janitors, acolytes, lectors, exorcists, etc. The term *Secular clergy* is the designation of priests of the Church of Rome who are not of any religious order, but have the care of parishes. Monks who are in holy orders are designated *Regular Clergy*.

CLERGY RESERVES: the clergy reserves were lands set apart, by virtue of the constitutional act of 1791, for the maintenance of the Protestant clergy in Upper and Lower Canada. The intention of the act was to reproduce in the colony an episcopal establishment similar to that of Great Britain, to whose primate it was to be subordinate. The provincial governors were directed under the act to reserve one seventh of the land for the support of the Protestant clergy. The reserved blocks of land were to be distributed among those granted to settlers. In Upper Canada a full seventh of all the land was to be granted. In Lower Canada reserves were to be made only in proportion to new settlement and not in respect of lands already occupied. No reservations were made in the latter province until 1796. Reservations were made each year until 1838 (except in 1813). The total reservations made in Lower Canada amounted to over 930,000 acres: in the Upper Province to about 2,400,000 acres. The crown was also empowered to authorize the lieutenant-governor of each province from time to time to erect parsonages, to endow them with a portion of the reserve lands and to present incumbents to them (constitutional act. Secs. 38, 39, 40).

In 1827 the assembly of Upper Canada asked the crown to devote the reserves to the creation of schools and of churches of all denominations. The same request was repeated in each of the three following years with considerable popular agitation. Meantime the endowment of rectories as provided by the act of 1791, was authorized by instructions from the crown in 1825. The excited state of public feeling delayed for some years the execution of this project, but in 1836, 54 rectories were endowed with 400 acres each. The reserved lands were subsequently sold and the proceeds given to the municipal authorities for education and local improvements. Consult: Lindsay, *The Clergy Reserves* (1851); *Memoir of Bishop Strachan* (1870); Ryerson, *Story of My Life* (1883).

CLERICAL ERROR, *klĕr'ĭ-kăl ĕr'ẽr* [see CLERGY]: an unintentional error or omission made in the transcription of a deed or other written instrument; a venial or pardonable error. *Note.*—In the middle ages L. *clerĭcus;* Gr. *klērĭkos;* It. *clerico*, one of the clergy; whence F. *clergé*, was applied to the whole body of the clergy, and they were the only educated class in the community. When education began to be diffused among the other classes

the name *clericus* was also applied to every educated man, even though not a deacon or priest, whence *clerical error*, an ordinary or unintentional slip or error in a written composition.

CLERK, n. *klėrk* [L. *clerĭcus*, a clerk: AS. *cleric*, a clerk, a priest]: a clergyman, *obs.* except in law; a scholar, *obs.*: a reader of responses in the church-service; one engaged to write in an office or keep business books; a scribe, accountant, or recording officer; an assistant in a shop or business. CLERK'SHIP, n. the office of a clerk. CLERK-LIKE, a. having the accomplishments and learning of a clerk. CLERKLY, a. *klėrk'lĭ*, in *OE.*, clerk-like, scholar-like; cunning; AD. in a learned manner. SHIP'S CLERK, civil officer on board a ship of war, under the immediate orders of the captain. He keeps all the captain's documents, which are very numerous; such as the ship's log, remarks on coasts and anchorages and the muster book. PARISH CLERK, official in the Church of England, who leads the responses in a congregation, and assists in the services of public worship, at funerals, etc., but is not in holy orders. There is usually one in each parish. In cathedrals and collegiate churches there are several of these lay-clerks, and in some cases they form a corporate body, having a common estate, besides payments from the chapter. Before the Reformantion, the duties were discharged by clergymen.

CLERK, JOHN, of Eldin, Mid-Lothian, Scotland: inventor of the modern British system of breaking the enemy's line at sea; d. 1812, May. 10; sixth son of Sir John Clerk of Penicuick, Bart. Though not a naval man, he studied deeply both the theory and practice of naval tactics, and in 1779 communicated to his friends a new maneuver for 'breaking the enemy's line' in a naval battle. Visiting London the following year, he had some conferences on the subject with naval officers, among whom was Sir Charles Douglas, Lord Rodney's capt. of the fleet in the memorable action 1782, Apr. 12, when the experiment was tried for the first time, and a decisive victory gained over the French. The principle was adopted by all British admirals, and led to many signal naval victories. In 1782, Clerk printed 50 copies of his *Essay on Naval Tactics*, for private distribution among his friends. It was reprinted and published 1790: the 2d, 3d, and 4th parts were added 1797; and the work was republished entire 1804, with a preface explaining the origin of his discoveries. The maneuver was claimed by Sir Howard Douglas for his father, Admiral Sir Charles Douglas, but Clerk's right to it is indisputable.

CLERK, JOHN, Lord ELDIN: Scottish judge: 1757, Apr. —1832, June; son of John Clerk, of Eldin. He was educated for the profession of law, and 1785 was admitted advocate. Distinguished for great clearness of perception and admirable powers of reasoning, he had for many years the largest practice at the Scottish bar, and 1823 was raised

to the bench, when he assumed the judicial title of Lord Eldin. He possessed a quaint sarcastic humor, and a coarse but ready wit, which, with his lameness and other bodily peculiarities, rendered him one of the most remarkable Edinburgh characters of his time. He died in Edinburgh.

CLERMONT EN BEAUVOISIS, *klär-mōng'tâng bo-vā-zē'* (CLERMONT SUR OISE, *sür wâz*): town of France, dept. of Oise, 36 m. n. of Paris. It was a place of military importance, repeatedly taken and retaken in the English wars, and given 1437 as a ransom for the French cap. La Hire. The Duke of Brunswick purchased it 1659, and the Duke of Lorraine about 1700: Henry IV. took it 1595, and Condé held it 1615. Among its many antiquities is the monument of a Greek who died while Gaul was held by the Romans. A castle partly built in the 10th c. is now a women's prison holding over 1000 inmates. The hôtel de ville and the church of St. Samson date from the 13th c. and have much architectural and antiquarian interest; the altar and windows of the latter are remarkable. Clermont has a commercial college, a library, a trade in cattle and horses, and some manufactures of cotton, linen, and paper. Charles the Fair was born here 1294. Pop. abt. 5,800.

CLERMONT-FERRAND, *klĕr-mōng'fĕr-rŏng'* (in the middle ages, *Clermont* was *Clarus Mons*, or *Clarimontium*): town of France, cap. of the dept. of Puy-de-Dôme (the *Augustonemetum* of the Romans, in the country of the Arverni). It is finely situated on a gentle elevation between the rivers Bedat and Allier, at the foot of a range of extinct volcanoes, crowned by the peak of Puy-de-Dôme about 5 m. from the town. It consists of the two towns of Clermont and Montferrand, upward of a mile apart, and connected by a fine avenue of trees. Clermont contains several remarkable buildings; the old Gothic cathedral the corn and linen hall, the theatre, and the Hôtel-dieu or Hospital. Clermont has several educational and scientific institutions, and a public library, in which are preserved some curious MSS. The people carry on the manufacture of linen, woolen cloth, hosiery, paper, etc., and an extensive traffic in the produce of the district, and in the transit trade between Paris and the s. of France. There are two mineral springs in the town, which are used for bathing. That of St. Alyre is most remarkable, having deposited in the course of ages an immense mass of limestone; and the deposit at one part forms over a rivulet a natural bridge 21 ft. long. The whole district abounds in such springs. A multitude of Roman antiquities attest the Roman origin of the city. In the middle ages Clermont was the residence of the counts of the same name, and became the seat of one of the oldest bishoprics of France. Several ecclesiastical councils were held here; the most remarkable, 1095, at which the first Crusade was instituted by Urban II. A statue has been erected to Pascal, a native of Clermont. Pop. (1901) 52,933.

There are in France several other towns named Clermont.

CLERUS, *klēr'ŭs:* genus of insects of the order *Coleoptera,* section *Pentamera,* and of the great family or sub-section *Serricornes.* They are beautiful beetles, generally found on flowers, often on those of umbelliferous plants, but their larvæ feed on the larvæ of different kind of bees; those of *C. apiarius* on the larvæ of the hive-bee. The insect is about half an inch long, greenish, the wing-cases scarlet with purplish blue bands. How the larvæ of this and other insects should be able to carry on their ravages with impunity in a bee-hive, has never yet been explained.

CLESINGER, *klā-zăng-zhā',* JEAN BAPTISTE AUGUSTE: 1814–1883, Jan. 6; b. Besançon: French sculptor. He studied at home and in Italy, married George Sand's daughter, and won notice 1844 by a bust of Scribe the dramatist. He exhibited his *Faun* and *Melancholy* 1846, *Girl Bitten by a Serpent,* 1847, and a colossal bust of *Liberty,* presented to the provisional govt. 1848. Among his later works are statues of Rachel as *Phædra* and *Lesbia,* of Tragedy at the Théâtre Français, of *Sappho,* a *Gypsy Girl, Cornelia and her Children* (1861), and *Cleopatra* (1869); equestrian figures of Napoleon I., Francis I. (1854), and Francis Joseph of Austria (1873); busts of Charlotte Corday, George Sand, the Czar and King of Prussia (1867), and Gen. Cissey. C. followed Canova in the use of color and of picturesque effects, but was thought to carry this classical revival too far. He died in Paris.

CLEVELAND, *klēv'land:* the largest city in Ohio; cap. of Cuyahoga co., an important industrial center and shipping port on Lake Erie at the mouth of the Cupahoga river, and on the Ohio canal, 138 m. n.e. of Columbus, 255 m. n.e. of Cincinnati, 140 m. n.w. of Pittsburg, 357 m. e. of Chicago, and 623 m. n.w. by rail (500 m. overland) from New York.

*Railroads.*— C. is entered by 9 leading railway systems; the New York Central R. R., through its feeder the Lake Shore from Buffalo; the Pennsylvania R. R. from Pittsburg; the Baltimore & Ohio R. R. through the valley; the Erie R. R. through Akron; the Cleveland, Cincinnati, Chicago & St. Louis, the New York, Chicago & St. Louis, the Wheeling & Lake Erie, and the Cleveland, Akron & Columbus R. Rs. The railroad facilities are supplemental to the extensive water transportation and shipping communications with all the principal lake ports.

*Harbor.*— The Cuyahoga river traverses the city centrally, and its windings afford nearly 20 m. of dock front provided with numerous commodious wharves constructed for the ore, coal, and lumber trades. To facilitate entrance to the river and provide a harbor of refuge and anchorage for shipping, the federal govt. constructed long piers on each side of the river at its mouth, projecting into the lake, and protected by

THE SOLDIERS' AND SAILORS' MONUMENT.

transversal breakwaters, forming commodious east and west harbors, with an area of 33 sq. m.; the total cost was nearly $3,000,000.

*Plan, Streets, Buildings, etc.*—The city has an area of 34 sq. m. extending 10 m. along the lake front and 6 m. inland. It is built in a valley and on plateaus, the site being not unlike an open fan extended to cover a little more than half a circle, the shore of the lake forming the chord; the general direction is n.e. and s.w., with a bend toward the w. near the w. end. The surface on both sides of the river is depressed, making a low and nearly level valley which affords excellent locations for the iron ore, coal, and lumber trades, and for shipping, shipbuilding, and general manufacturing. Bordering this valley, the city extends e. and w. over nearly level plateaus, about 80 ft. above the level of the lake and river, and these sections constitute the choicest residential portion of the city. Besides many streets passing through the valley over numerous bridges, these plateaus are connected by five high, level viaducts, from less than 1,000 ft. to more than 3,000 ft. in length, accommodating pedestrians, vehicles, and electric street railways. On these plateaus, and especially the e., near the valley, are the streets used principally for trade and light manufacturing. Many of the residential streets are wider than those ordinarily found in large cities, and their beauty is greatly enhanced by spacious lawns. As far as the requirements of business and thoroughfares would permit, the forest in which the city was originally laid out has been preserved, whence C. is happily distinguished as the 'Forest City.' On each side, excepting the lake front, the city merges into numerous attractive suburbs. In the business section, the wholesale trade is found principally on Merwin and River streets, near the river, and on Water, Bank, Seneca, and St. Clair streets, on the e. plateau; and the retail trade on Superior, Ontario, Cedar, Central, Woodland, Broadway, Pearl, Lorain, and Detroit. Euclid ave. is widely noted for its magnificent residences and their surroundings of broad lawns, noble trees, shrubbery, and statues. Prospect, parts of Superior, Wilson, Broadway, Jennings, Franklin, and Detroit streets also contain many effective examples of residence architecture. The Square, or Monumental Park, on high ground a short distance from the lake and e. of the river, and the grouping in its vicinity of the principal buildings makes it the natural business centre of the city. All the thoroughfares to the city enter streets which lead directly to this centre, and from it radiate the main street railways. This park contains the soldiers' and sailors' monument, a small granite and marble temple surmounted by a minaret-like column of marble supporting a large bronze figure of liberty, and flanked on four sides by pedestals bearing

bronze groups typifying the various arms of the military service. The interior contains bronze portrait busts and reliefs and entablatures giving the names of the Union soldiers and sailors from Cuyahoga co. Situated in the Square also is a statue of Gen. Moses Cleaveland, the founder of the city, a bronze figure in Continental dress on a circular granite pedestal.

After considerable agitation extended over several years, a plan adopted in 1902 for the erection of a number of large public buildings, gave the opportunity to group and harmonize these structures so as to produce a splendid effect of architectural unity. As projected, an ornamental mall or promenade park, quarter of a mile in length, leads from Lake Erie front to Superior street, the main thoroughfare, and forms the main axis of the scheme. At the head of the mall separating it from the Square are the Federal Building (including post office, custom house, and court house), the Public Library and a small park to balance with the Square, two blocks distant. Flanking opposite sides of the mall are the Chamber of Commerce and County Court House, the City Hall, and other buildings, while at the lake end is the Union Terminal Station with screened train sheds, the entrance forming a 'vestibule' to the city, and a continuation of the mall or 'court of honor,' to the lake side, in the foreground of which are recreation piers, public baths, playgrounds, and places of popular amusement. Exclusive of the federal buildings and union station, the total cost of these improvements amount to nearly $14,000,000. Besides those mentioned, other notable structures include the Society for Savings Building, the Masonic Temple, the Caxton Building, containing the Case Library, the Case School of Applied Science, the Arcade and Colonial Arcade, the Knights of Pythias' Temple, Music Hall, the Armory of the National Guard, the Sheriff street market, several fine office and newspaper buildings, colleges, schools, churches, banks, hotels, theatres, clubs, hospitals, dispensaries, asylums, and other benevolent institutions. Prominent among the churches are the Episcopal Cathedral of St. John the Evangelist, the Catholic Cathedral, Trinity Episcopal, Old Stone (Presb.), Woodland Ave. (Presb.), Calvary, and other Presbyterian churches, Plymouth Congregational, First Methodist, Euclid Ave. Baptist, and the First Congregational. The hospitals include the U. S. Marine, Lakeside, City and Infirmary, General, Homœopathic, and several Catholic institutions. The House of Correction, Northern Insane Asylum, Catholic, Protestant, and Hebrew orphanges, and homes for the aged, the Goodrich Settlement House are other notable institutions.

*Educational Institutions.*—The first public high school in the U. S. was established here 1846. According to

recent statistics there were 109,047 children of school age in the city, of whom 59,635 were enrolled in the public schools, and about 16,000 in denominational, parish, and private schools. There were 69 buildings used for public school purposes; 1,242 teachers; public school property of an estimated value of about $5,140,659; receipts, $1,896,882; and expenditures aggregating $1,933,966. The high schools numbered 5; endowed private secondary schools, 4; and there were a normal training, 2 manual training, and 2 cooking schools, and 6 business colleges. The principal institution for superior education is Western Reserve Univ., an outgrowth of Adelbert College, founded at Hudson 1826 under the name of Western Reserve College. In 1882, having received a conditional gift of $500,000 from the late Amasa Stone, of C., it was moved to that city and its name changed as at present. The Case School of Applied Science is an important technical school, endowed with a gift of $1,250,000 by the late Leonard Case, and having a library of 45,000 vols. C. has a Rom. Cath. theological seminary, St. Mary's, and, besides the medical college of Western Reserve Univ., the medical dept. of the Univ. of Wooster, and a homœopathic medical college. Besides the Public Library, with nearly 200,000 vols., and branch distributing stations, the Western Reserve Historical, Case, Cleveland Medical, and the law libraries are important. C. has numerous well-conducted daily and weekly newspapers, monthly and quarterly periodicals.

*Parks.*—The park system is one of the finest in the country, comprising nearly 1,400 acres, the smaller parks ranging from ½ to 10 acres, and the larger from 80 to 280 acres each. Besides the mall and Square already mentioned, two of the large parks, Gordon on the e. side, and Edgewater on the w., together with a small park, Lake View, border on Lake Erie, and have fine views, drives, and bathing facilities. Wade Park, separated from the grounds of the Western Reserve Univ. by Euclid ave., in addition to the beauties of extensive walks and drives, contains the public zoological gardens. This park was laid out and maintained by a citizen of the same name till 1882, when he presented to the city, and William J. Gordon's private park was acquired by the city through the owner's bequest in 1892. In Wade Park is a marble monument to Com. Perry, the hero of Lake Erie, a figure of the officer beside a ship's capstan with figures of two midshipmen near by, and a circular relief showing Perry being rowed from his disabled flagship. Another monument of more than national interest is that at the place of entombment of Pres. Garfield in Lake View cemetery. The edifice is a combined mausoleum and monument of stone, consisting of a high tower with conical roof and inclosed portico erected on the apex

of a series of terraces. The remains of the pres., in a bronze casket, rest on a pedestal in the crypt. In the centre of the large circular room above is a marble statue of the pres., and the walls and galleries, lighted by stained glass windows, are decorated with emblematic and allegorical figures and groups in mosaic. Woodland and Riverside are also beautiful cemeteries.

*Municipal Conditions.*—The city has about 600 m. of streets of which nearly 200 m. are paved largely with Medina dressed stone, also with asphalt, vitrified brick, and macadam. The electric street railway system comprises over 200 m. within the city, with suburban extensions of from 25 m. to 39 m., reaching Elyria, Painesville, and Akron. Northeast of the city is Glenville, celebrated for its trotting track. C. is policed by a force of 250 patrolmen and officers, and has a good fire department, comprising 28 steam engine companies, 9 hook and ladder companies, and 3 hose companies. The street cleaning department is also organized on a liberal basis. The city is lighted by gas and electricity at an annual cost of about $327,000. The sewerage system has about 270 m. of drains. The system of water supply is owned by the city and has cost over $10,000,000. Water is obtained from the lake through intakes protected by cribs 1½ m. to 4 m. from the shore. From these cribs the water flows through three tunnels to the pumping station on Division street, where there are pumps of the horizontal, direct-acting type, with a combined pumping capacity of several million gallons daily. The water is supplied to consumers through large mains, which at intervals are connected with each other and with distributing mains, and are continued as two mains to the low service reservoir, 6 m. e. of the pumping station.

*Government.*—C. has been described as the 'best governed community in the world,' and is one of the centers of national agitation for the municipal ownership of public service utilities. With a constituency more radical along industrial lines than in any other American city, noted for the independence of its voting, a long agitation of franchise management has awakened the public to a full appreciation of the values of these properties, and the plan to tax, and then municipalize them, is in operation. The forms of municipal and school govt. were modified after the federal plan in 1891. The legislative authority is vested in a council of two representatives from each of the 11 districts; and the executive in a mayor and a cabinet of 6 directors having charge of the depts. of law, public works, police, fire, accounts, and charities and corrections. The mayor is responsible for the administration of each dept., has a limited veto power, and he and the directors constitute an advisory council. The public schools are governed by a council of 7 members

elected at large, the executive control being vested in a director, also elected at large, who appoints the supt. and all employees excepting teachers. Teachers are appointed by and responsible to the supt. and he and all other employees are responsible to the director. The director has a limited veto, and takes part in the proceedings of the council.

*Finances.*—The bonds and notes outstanding, including the water debt, aggregated recently $17,976,366.05, and bonds toward city hall debt, $700,000, making the gross public debt $18,676,366. Deducting the water debt, $3,287,000, payment of which is specially provided for, and all sinking funds $3,758,316.15, left a net debt of $10,931,049.85. The city has a total assessed valuation of $196,453,645, and the tax rate is $26.70 per $1,000.

*Commerce.*—The city has very large coal, iron, lumber, and general mercantile shipping interests, both by water and rail. The discovery and development of the Lake Superior iron-ore region, for 60 per cent. of whose vast output the Cleveland district is the market, were the chief factors in the rapid growth of C. Supplemental to this, shipping and shipbuilding interests profited. The fleet registered at the custom-house is valued at from $15,000,000 to $20,000,000, and C. claims to rank second in the U. S. in the value of its floating property; 80 per cent. of the shipping used in carrying the ore and coal of all the mining region of northern Ohio and western Pennsylvania is owned in Cleveland. A typical year's exports aggregate in value about $3,376,000, and the imports of merchandise $3,194,000. The entrances of shipping in the Cuyahoga district of which C. is the port of entry averages 7,204 vessels annually, with a total tonnage of 8,893,000. Total number of vessels entering and clearing, 14,413; total tonnage 17,724,000. It receives about 4,000,000 tons of ore yearly; 6,000,000 tons of coal, reshipping half; and has an enormous trade in grain, lumber, petroleum, and fresh-water fish.

*Manufactures.*—Commersurately with its commerce, its manufacturing industries have also grown, notably shipbuilding, C. producing a greater number of steel steam vessels than any other port in the U. S. Other important lines of manufactures are iron and steel, foundry and machine shop products, slaughtering and meat packing, malt liquors, clothing, flour and grist, lumber, planing-mill products, publications, paint, forgings, and railroad cars. Recent annual statistics give 2,297 manufacturing establishments, employing $98,303,682 capital, and 58,810 workers, receiving $27,892,689; $71,597,595 worth of stock was used yielding products of an aggregate value of $139,849,806.

*Banking.*—There are over 70 banks of all denominations operating in the city, including 16 national banks,

with a combined capital of $12,000,000. The deposits in the national and savings banks exceed $130,000,000. A typical year's exchanges at the U. S. clearing-house aggregated $749,470,620.

*History.*—C. was settled 1796, July, under the direction of Gen. Moses Cleaveland, agent of the Connecticut Land company, who brought with him in a small coasting vessel a company of settlers from Connecticut. The site was in the 'Western Reserve' of land apportioned to the state of Conn., and the first building was a rude cabin erected near the mouth of the river to receive the stores of the settlers. Gen. Cleaveland had the site surveyed, reserved a green or square and certain adjoining lands for public purposes, located wide streets in the forests contiguous to the public square, and sold lots of two acres each to the following 'first proprietors': Richard M. Stoddard, Job B. Stiles, Joseph Landen, Nathan Chapman, Wareham Shepherd, and Mr. Baum. The growth of the settlement was at first very slow. In 1805 the first post-office was established and the settlement made a port of entry; 1809 it was made the co. seat; 1811 the first library was opened; and 1814 the place was incorporated as a village. The first bank was opened 1816; the first public school building acquired 1817; the first steam vessel arrived and the first newspaper was published 1818; and the first vessel was built 1824. In 1827 the Ohio canal was opened from C. to Akron, and 1832 it was completed to the Ohio river. The early settlements were naturally on and near the banks of the river, and in course of time the village became divided in local interests, the portion on the e. side of the river retaining the name of C., and that on the w. side assuming the name of Brooklyn. The rivalry of the two parts gained in strength, and the separation of the former common interests became so distinct that the legislature 1836 incorporated the part on the e. side as the city of C. and a part on the w. as Ohio City. In 1854 the two cities were consolidated under the name of C. with an estimated joint pop. of 33,000, and with the opening up of railroads and the development of the iron and coal industry, about 1860, the city began to grow rapidly. East Cleveland (1872), Newburg (1873), West Cleveland and Brooklyn (1893), were annexed, and in 1896 C. celebrated its centennial.

*Population.*—(1810) 547; (1850) 17,034; (1860) 43,417; (1870) 92,829; (1880) 160,146; (1890) 261,353; (1900) 381,768; (1910) 560,663.

CLEVELAND, *klēv'land* (Cliff-land): mountainous district, of Yorkshire, Eng., between Whitby and the Tees. The discovery of iron ore in 1840 converted a wild picturesque country into one of the greatest manufacturing districts of Eng. producing about one-third the total iron ore of the country, see MIDDLESBOROUGH.

GROVER CLEVELAND.

Twenty-second and Twenty-fourth President of the United States

CLEVELAND, GROVER: 24th President of the United States; born Caldwell, N. J., 1837, Mar. 18. He received an academical education in Fayetteville and Clinton, N. Y.; became an asst. teacher in the New York Institution for the Blind 1853; removed to Buffalo and began studying law 1855; and was admitted to the bar 1859. In 1863 he was appointed asst. dist. atty. of Erie co., and held the office for three years; and 1865 was defeated as democratic candidate for dist. atty. He was a law partner of Isaac V. Vanderpool 1865-69, then went into the new firm of Lanning, Cleveland & Folsom, and was in active practice till 1870, when he was elected sheriff of Erie co. Retiring from this office 1873, he formed a partnership with his intimate friend and political antagonist who had defeated him for dist.atty., Lyman K. Bass, and another friend, under the firm name of Bass, Cleveland & Bissell, subsequently Cleveland & Bissell. In 1881 he was elected mayor of Buffalo by the largest majority ever given a candidate in that city. At the beginning of his administration he used the veto power freely, and within six months had saved the city nearly $1,000,000 by thus checking unwise or extravagant expenditures. In 1882 he was elected governor of N. Y., after a most exciting canvass, receiving a total vote of 918,894, a plurality over his republican opponent, Charles J. Folger, sec. of the U. S. treas., of 194,854, and a majority over all opposing candidates of 151,742. As gov. he used his veto prerogative as freely as when mayor. While occupying the gubernatorial chair he was nominated by the national democratic convention at Chicago 1884, July 11 by a vote of 683 out of 820 as candidate for the presidency, and the nomination was subsequently made unanimous. The canvass that followed was unusually exciting. Four candidates were nominated: Cleveland by the democrats, James G. Blaine (q.v.) by the republicans, Benjamin F. Butler (q.v.) by the labor and greenback parties, and John P. St. John (q.v.) by the prohibitionists. The chief interest centered on the democratic and republican candidates; there was a large defection of republicans from the candidate of their party; and the personality of the leading candidates rather than distinctive national issues was largely the basis of campaign discussions. Of the total popular vote 10,067,610, Cleveland received 4,874,986, Blaine 4,851,981, Butler 175,370, St. John 150,369, scattering 14,904. In the electoral college Cleveland had a total electoral vote of 219,—a majority of 37. His cabinet appointments were: Thomas F. Bayard, sec. of state; Daniel Manning, sec. of the treas.; William C. Endicott, sec. of war; William C. Whitney, sec. of the navy; William F. Vilas, postmaster-gen.; Augustus H. Garland, atty.gen., and Lucius Q. C. Lamar, sec. of the interior. He observed the same methods of administration as president as he had when mayor and governor, and vetoed 115 bills out of 987 that passed both houses of congress during the first full session that followed his inauguration,

and nearly all (102) were private pension bills. He declared that public office was a public trust, advocated a thorough reform in the civil service, and announced that removals from office would be made only for incompetency and offensive partisanship. 1886, June 2, he was married in the White House to Frances Folsom, daughter of his former law partner. His vetoes of private pension bills aroused a strong feeling against his administration in G. A. R. circles. His annual message Dec., 1887, was wholly devoted to the tariff question, advocating free raw materials and a general reduction of duties. His declaration that unnecessary taxation is unjust taxation was taken up as his party's campaign cry, and Cleveland was unanimously renominated 1888, June 8, at St. Louis. The republicans accepted the challenge, and the tariff was the vital issue of the campaign, resulting in the defeat of Cleveland by Harrison. After his retirement Cleveland removed to New York and resumed the practice of law. 1892, June 23, at Chicago, he was for the third time nominated by the democrats, receiving 617⅓ votes to 114 for David B. Hill (N. Y.), 103 for Horace Boies (Io.), 36½ for Arthur P. Gorman (Md.), and 14 for John G. Carlisle (Ky).). Again the tariff question was the chief issue of the campaign, and Cleveland was elected, carrying 23 states, including Ill., Ind., and Wis. The republicans nominated Benjamin Harrison, the people's party James B. Weaver, the prohibitionists John Bidwell, and the socialist labor party Simon Wing. Of the total popular vote, 12,059,351, Cleveland received 5,556,918, Harrison 5,176,108, Weaver 1,041,028, Bidwell 264,133, and Wing 21,164. Cleveland's plurality 380,810. In the electoral college Cleveland received 277 votes, Harrison 145, and Weaver 22. On retiring from office, Cleveland took residence in Princeton, N. J. The country suffered in 1893 from one of the most serious financial panics in its history, brought on, according to republicans, as the result of the election of Cleveland, and according to democrats, as the result of unwise republican legislation which brought the silver question to the front. Cleveland called an extra session of congress 1893, Aug. 7, to deal with the finances, strongly urging the repeal of the Sherman law, which was accomplished chiefly through the uncompromising attitude of the president. The vigorous and unusual efforts made by Cleveland to secure the passage of a tariff bill in accordance with his convictions, met with such poor success that he refused to sign the Wilson-Gorman bill, which became a law 1894, Aug. 27, without his signature. The controversy over his foreign policy, particularly his treatment of the Hawaiian question, was very bitter. Business depression, which always injures the party in power, and popular disapproval of congressional action, vigorously expressed by Cleveland himself, brought about overwhelming democratic defeat in the Nov. elections of 1894 and 1895, and placed the legislative branch of the government in republican control during the second half of his administration.

CLEVER, a. *klĕvĕr* [said to be a corruption of OE. *deliver*, quick, nimble—from OF. *delivre*, free, prompt; prov. Dan. *klever*, clever: comp. Gael. *gle-mhòr*, very great or excellent]: done with sufficient excellence to commend itself; smartly able to turn one's attainments to the best account; skilful; ingenious; smart; not dull; ready. CLEV'ERLY, ad. *-lĭ*, skilfully; dexterously. CLEV'ERISH, a. somewhat clever. CLEV'ERNESS, n. the quality of being clever. SYN. of 'clever': skilful; dexterous; adroit; expert; able; apt: ingenious; OE. handsome; smart.

CLEVES, *klēvz* (Ger. *Kleve*): town of Rhenish Prussia, 48 m. n.w. of Düsseldorf; on three gentle elevations, about 2½ m. from the Rhine, with which it communicates by canal, in the midst of a rich and beautiful country It has a fine old castle, built partially on a commanding rock, in which Anne of Cleves, one of the wives of Henry VIII., was born, and which is now converted into public offices. in the collegiate church, which dates from the 14th c., are some good monuments to the counts of Cleves. C. has manufactures of woolen and cotton fabrics, silks, hosiery, tobacco, etc. Pop. 14,700.

The ancient duchy of C., extending along both banks of the Rhine, passed 1614 to the reigning house of Prussia.

CLEVIS, *klĕv'ĭs*, or CLEVY, n. *klĕv'ĭ:* a draft-iron for a plow; a piece of iron bent to the form of an ox-bow, having the ends bored to receive a pin.

CLEW, n. *klô* [AS. *clíwe*, a clew, a hank: Dut. *klouwen*, and *cluwen*, a ball of yarn, a clew: connected with W. *clob*, a hump: L. *glomus*, a ball of twine]: a ball of thread; the thread which forms the ball; anything that guides or directs in an intricate case (usually spelled *clue*); one of the corners of a sail, the lower corner of a square sail, and the aftermost lower corner of a stay-sail: V. to truss up the sails of a ship to the yard. CLEW'ING, imp. CLEWED, pp. *klôd*. CLEWLINES, lines to truss up sails to the yards, those applied to the courses or largest sails of a ship are called *clew-garnets*.

CLEW BAY: inlet of the Atlantic, on the w. coast of co. Mayo, Ireland, 15 m. long by 8 m. wide. Some of the mountains on the n. rise 1,200 to 2,500 ft., but the land on the e. is lower, and leads to Westport, Newport, and Castlebar. Old red sandstone, carboniferous limestone, and Cambrian strata form the shores of the bay, which are generally bold and rocky, but have many small harbors and fishing-stations. The upper part of the bay is an archipelago containing 300 fertile and cultivated islets. At the entrance of the bay is Clare Isle, 4½ by 2 m., composed of old red sandstone and Cambrian rocks; and rising 1,520 feet.

CLICHÉ, *kle-shā'* [F.]: impression made by a die in melted tin, or other fusible metal. It is the proof of a medallist's or die-sinker's work, by which they judge of the effect, and ascertain the stage of progress which they have reached before the die is hardened. The same term is applied by the French to stereotype casts from wood-cuts.

CLICHY, *klē-shē':* town of France, dept. of Seine, about four m. n.w. of Paris, of which it is a suburb. It has manu-

factures of white-lead and chemical products. Pop. (1881) 24,320; (1886) 26,741; (1891) 30,698.

CLICK, n. *klĭk* [an imitative word: Dut *klicken,* to rattle: F. *cliquer,* to clap]: a sharp sound louder than a *tick* and thinner than a *clack;* a quick, light sound; a small piece of iron falling into a notched wheel: V. to strike louder and fuller than a *tick;* to make a quick, light sound. CLICK'ING, imp. CLICKED, pp. *klĭkt.* CLICK'ER, one who stands at the door to invite passers by to enter a shop.

CLICK'-BEETLE: popular name of many species of coleopterous insects of the tribe *Elaterides* (see ELATER), parents of the destructive larvæ well known to farmers by the name of WIRE-WORMS (q.v.). They derive the name C. from the sound which they make when, being laid on their back on any hard substance, they regain their feet by a spring, in the manner characteristic of the tribe to which they belong. SKIP-JACK is another popular name for them. The striped C. (*Agriotes* [*Cataphagus* or *Elater*] *lineatus*) is the parent of a very destructive kind of wire-worm.

CLIENT, n. *klī'ĕnt* [F. *client*—from L. *clien'tem,* one who had a patron: comp. Gael. *clann,* children; *cluinnte,* heard, or one who has been heard]: one who applies to a lawyer for advice, or to conduct his cause in a court of law; a dependent. CLI'ENTSHIP, n. the condition of a client. CLIENTÈLE, n. *klī'ĕn-tēl* [L. *clientēla,* the condition of a client in reference to his patron: F. *clientèle*]: the state or condition of a client; the business of a professional man; the number of his clients or patients.

CLI'ENT: see AGENT AND CLIENT: also PRINCIPAL AND AGENT; PATRON; COUNSEL.

CLIFF, n. *klĭf* [AS. *clif,* a rock: Icel. *kleif*—from *kliufa,* to cleave: Ger. *kluft,* a cavern, a cleft: Dut. *kleppe;* Dan. *klippe,* a rock]: a steep bank: a high and steep rock. CLIF'FY, a. *fĭ,* steep, broken, and rugged.

CLIFF, in Music: see CLEF.

CLIFF DWELLERS, in American archeology, the race which built and inhabited certain remarkable structures discovered in s.w. Colorado and the neighboring portions of the adjoining territories. These structures are situated in the valleys or cañons of the Mancos, McElmo, and San Juan rivers, and were first discovered 1874, Sep., by a small party of explorers connected with the U. S. Geological and Geographical Survey, and under the command of Mr. W. H. Jackson. The cliffs along these rivers are of sandstone, having almost perpendicular walls marked by narrow horizontal clefts and ledges at various elevations. Upon these ledges, in almost inaccessible situations, often at a height of several hundred ft. from the base of the cliff, small stone houses of superior workmanship were found, which had evidently been the homes and refuges of a somewhat advanced race long vanished from the region. Subsequent explorations have brought to view a large number of these nest-like dwellings, together with watch-towers and ruins of other structures. It is supposed that the C. were ancestors of the present Moquis of Arizona.

CLIFFORD, *klĭf-ford*, NATHAN: 1803, Aug. 18—1881, July 25; b. Rumney, N. H. He was educated at Haverhill and Hampton, N. H., and on his admission to the bar settled in York co. Me., 1827. He was in the legislature 1830-34, and speaker 1832-34; attorney-gen. of Me. 1834-38; in congress as a democrat 1839-43, making speeches for Van Buren in the campaign of 1840; U. S. attorney-gen. under Pres. Polk 1846-47, and 1848-49 commissioner and minister to Mexico: in the last capacity he arranged the cession of Cal. Pres. Buchanan made him an associate justice of the U. S. supreme court 1858. He published *U. S. Circuit Court Reports* (2 vols. Boston, 1869). As the oldest judge he presided over the electoral commission 1877. He died at Cornish, Maine.

CLIFFORD, *klĭf-ford*, WILLIAM KINGDON, F.R.S.: 1845, May 4—1879, Mar. 3; b. Exeter, England: prof. of applied mathematics and mechanics at Univ. College, London; one of the foremost mathematicians of his time. He was educated at a school in his native town, at King's College, London, and at Trinity College, Cambridge. While at Trinity, he did not confine himself to examination subjects, but read largely in the great mathematical writers, and was second wrangler in the mathematical tripos of 1867. At this time, while excelling in gymnastics, he would also solve and propound problems in the pages of the *Educational Times*, and could discuss with ease complicated theorems of solid geometry without the aid of paper or diagram. A high-churchman at first, Clifford before taking his degree threw off all restraints of conventional theology, and discussed with eagerness yet with undoubted sincerity, and in an almost pathetic spirit of disbelief, some of the deepest questions presented by Christianity. In 1871, Aug., he was elected to the chair of mathematics and mechanics at Univ. College, London, which post he retained until his untimely death at Madeira. Clifford established his reputation as an original thinker with the faculty of expressing scientific thought in plain and simple language, first by a lecture at the royal institution, *On some of the Conditions of Mental Development*. He was a valued member of the London Mathematical Soc., contributing to the *Proceedings;* for a time he acted as sec., and afterward vice-pres. of the mathematical and physical section of the British Assoc.; he also lectured to the Sunday Lecture Soc. on such subjects as *Ether*, *Atoms*, and *the Sun's Place in the Universe*. Besides these articles, he issued the first part of a larger text-book, *Elements of Dynamic* (1878). A selection from his *Mathematical Papers* appeared 1881. See Clifford's *Lectures and Essays*, edited by Stephen and Pollock, 1879.

CLIFT, n. *klĭft:* same as CLEFT, which see.

CLIFTON, *klĭf'ton:* beautiful and favorite Eng. watering place in the s. w. of Gloucestershire, forming the western suburb and part of the parliamentary borough of

Bristol. It is built on the sides and top of a carboniferous limestone hill, 308 ft. high; commands fine picturesque views; and is separated from a similar cliff by a deep chasm on the s., through which flows the navigable Avon. The rock abounds in fossils and quartz, or Bristol diamonds. It has a tepid spring of 73° F., which contains carbonic acid and salts of magnesia, and was brought into notice about 1695; but the former popularity of the spa has declined, and the pump-room has been destroyed. At the time of the great Lisbon earthquake this water became red, and the Avon, which rises here 35 ft. at high water, suddenly turned black. On Clifton Down are some remains of a Roman camp, 510 by 300 ft. An extensive camp is in good preservation on the opposite side of the gorge, with which Clifton is connected by a suspension bridge, 275 ft. above low water, and 702 ft. in span. Clifton College ranks among the best English schools: See BRISTOL.

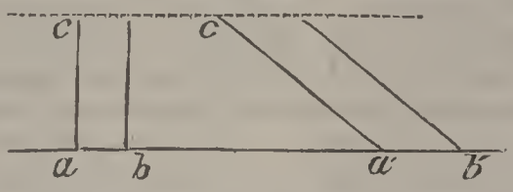
CLIFTON, *klĭf'ton:* village of Welland co., Ontario, Canada, on the Niagara river; on the Erie and Niagara railroad, and the e. terminus of the Great Western railway. Here is the suspension bridge, 1 m. below the falls. Clifton has a museum, several hotels, and a large export trade to the United States. Pop. 2,347.

CLIFTON SPRINGS: village of Ontario co., N. Y., on the Auburn branch of the N. Y. Central railroad, 10 m. e.n.e. of Canandaigua. It has extensive sulphur springs, near which a large sanitarium has been built. It has four churches, a school, and a newspaper. Pop. (1880) 902; (1890) 1,297; (1900) 1,617; (1910) 1,600.

CLIMACTERIC, n. *klī-măk'tėr-ĭk* or *klīm'ak-tėr'ĭk* [Gr. *klimaktēr*, a step, as of a ladder]: one of the supposed critical steps or periods in human life in which some great change is by some deemed to take place in the human constitution. The first climacteric is, according to some, the seventh year; the others are multiples of the first, as 14, 21, etc.: 63 and 84 are called the grand climacterics, and the dangers attending these periods are supposed to be great. Some held, according to this doctrine, every seventh year a climacteric; others allowed this title only to the product of the multiplication of the climacterical space by an odd number, as 3, 5, 7, 9; others considered every ninth year as a climacteric.

A climacteric disease is a disease affecting both men and women, but more obvious in the former. It may be looked for about the 63d year of age, but varies in the time of its coming according to the constitution of the individual, the limits being in the one direction 50, and in the other 75. Its most common predisposing cause is mental anxiety or suffering. The expression of the countenance alters for the worse, the pulse becomes accelerated, the flesh wastes away without obvious cause; there are sleepless nights, and wandering pains flit through the head and chest, and sleep is either deficient or brings little refreshment. After a time recovery as a rule takes place, but the countenance never recovers its former aspect, or the constitution its vigor.

CLIMATE, n. *klī′māt* [F. *climat*, a climat—from mid. L. *clīmătem:* Gr. *klīmăta*, slopes, afterward applied to tracts of country, with reference to their supposed inclination to the pole, and the effect of the obliquity of the sun's rays upon the temperature]: the condition of a place or country with respect to the weather that prevails; a region or district of country. CLIMAT′IC, a. or CLIMAT′ICAL, a. *-măt′ĭ-kăl*, pertaining to or depending on a climate. CLIME, n. *klīm*, poetic for *climate;* a region; a country. CLI′MATOL′OGY, n. *-mă-tŏl′ŏ-jĭ* [Gr. *logos*, discourse]: the science which treats of the different climates of the earth, their causes, products, and peculiarities. CLI′MATOLOG′ICAL, a. *-lŏj′ĭ-kăl*, pertaining to. CLI′MATIZE, v. *-tīz*, to accustom to a new climate. CLI′MATI′ZING, imp. CLI′MATIZED, pp. *-tīzd*.—Climate is a term now employed as including not merely the conditions of a place or country with regard to temperature, but also its meteorological conditions generally, so far as they exercise influence on the animal and vegetable kingdoms. The effect of the sun's rays is greatest where they fall perpendicularly on the surface of the earth, and diminishes as their obliquity increases; the surface which receives any given amount of the sun's rays increasing with their increased obliquity, as *a′b′* is greater than *ab* in the annexed




figure; while the oblique rays being subjected to the influence of a greater number of particles of the atmosphere, as *c′a′* is longer than *ca*, a greater amount of their heat is absorbed before they reach the surface of the earth. The greater or smaller extent of surface receiving a certain amount of heat, also makes important differences to arise from *exposure* by slope toward the equator or toward the nearest pole. *Elevation* is a most important cause of differences of climate. As we ascend from the level of the sea to the greatest mountain altitudes, even at the equator, the temperature gradually diminishes, owing to the diminished density of the atmosphere, and we reach a region of perpetual snow, as in approaching the poles. The progressive diminution of the temperature is, however, affected by many other causes, so that the line of perpetual snow is far from being at the same elevation in all places of the same latitude. Thus, the snow-line on the s. side of the Hymalaya is depressed by the moisture of the aërial currents from the Indian Ocean; and that on the n. side is elevated by the radiation of heat in the vast dry table-lands of central Asia, and the consequent ascending streams of warm, dry air; so that the difference between the two is not less than 4,000 ft. in favor of the *northern* side of the mountain ranges; and Humboldt says, 'millions of men of Tibetian origin occupy populous towns in a country where fields and towns would, during the whole year, have been buried

in snow, if these table-lands had been less continuous and less extensive.' As the actual temperature of the atmosphere depends not so much on the direct rays of the sun as on the radiation from the heated surface of the earth, the diversities in the character of that surface are productive of great effects in modifying climate. A sandy desert, a tract of country clothed with luxuriant vegetation, and an expanse of water, absorb and radiate heat in very different degrees. A newly-plowed field both absorbs and radiates heat much more rapidly than a field covered with grass. A sandy desert heats the atmosphere above it much more than either a fertile tract or a watery expanse, and a watery expanse still less than a fertile tract; but, on the other hand, the desert cools sooner by radiation; while the heat absorbed by the water, being diffused through a larger mass—partly by reason of the motion continually taking place in the fluid substance—and affecting greater depths, the influence of the ocean, of seas, and of great lakes, is very powerful in maintaining a greater equality in the temperature of the atmosphere. Thus maritime places, and particularly islands and peninsulas, have a more equal temperature, with less diversity of the extremes of summer and winter, than more inland or continental places otherwise similarly situated. The effect of the sea is modified by many circumstances, particularly by currents of which the Gulf Stream (q.v.) affords a notable instance, the heated water conveyed by it from the equatorial to the polar regions having a great influence on the C., particularly of the n.w. of Europe. The temperature of Europe is in part dependent also on the warm south winds, which have absorbed heat from the great sandy deserts of Africa; and over the world generally, atmospheric currents must be regarded as exercising even a greater influence on climate than oceanic currents The quantity of rain or snow that falls in the course of a year, and the times and manner of its falling, are circumstances which have a great effect on climate. These circumstances are much influenced by the distribution of land and water, and by the elevation and character of the surface of the land, which, doubtless, influence also electric and other meteorological conditions, less understood, but certainly not unimportant.

The relations of climate to vegetation are determined not merely by the mean annual temperature, but in a great measure also—and, with regard to many plants, entirely—by the duration and temperature of summer. Thus, maize thrives in climates of which the winter-cold is severe, the summer season alone being sufficient for its whole life; while, on the other hand, such plants as fuchsias, some kinds of laurel, and even the common hawthorn, which thrive where maize would scarcely put forth an ear, would perish from the colder winters of countries where it is profitably cultivated. The polar limit of particular species of animals, except those which hybernate, is generally determined by the degree of winter-cold which they can bear without injury.

Bogs and marshes have an unfavorable influence on climate, cooling the air and causing fogs, as clay-soils also to some extent do, through their retentiveness of moisture; while marshes of some kinds, and in some situations, abound in exhalations very unfavorable to health. Similar remarks apply to large tracts of forest. The clearing, drainage, and cultivation of land have generally favorable effects on climate; though plantations of trees are often beneficial for shelter; and a complete removal of natural forests may prevent the deposition of moisture from the atmosphere to such a degree as to cause droughts, a result strikingly exemplified in some of the smaller W. India Islands, and the tendency to which is said to be manifest on a great scale in eastern N. America.

See some principal geographical articles; also AGRICULTURE: ARBORCULTURE: ATMOSPHERE: METEOROLOGY: MONSOONS: RAIN: SEASONS: STORMS: TERRESTRIAL TEMPERATURE: TRADE-WINDS: WIND.

CLIMAX, n. *klī′măks* [Gr. *klimax*, a staircase, a ladder]: step by step; ascent; a figure of speech in which the sentences or clauses present propositions or objects rising, as it were, step by step upward in intensity; summit or culmination.

CLIMB, v. *klīm* [AS. *climban*, to climb: Dut. *klemmen*, to hold tight: *klimmen*, to climb: Dan. *klynge*, to cling, to crowd]: to mount upward with the hands and feet, as up a steep hill, precipice, or tree; to ascend with labor, or as a plant by means of tendrils. CLIMB′ING, imp. *klīm′ĭng:* ADJ. possessing the power of climbing, as plants; ascending; tending to climb. CLIMBED, pp. *klīmd*. CLIMBER, n. *klīm′ėr*, one who; a climbing plant. CLIMB′ERS, n. plu. *-ėrz* (*Scansores*): in *ornith.*, an order of birds generally characterized by having two toes before, opposed by two toes behind, to adapt their feet for grasping the branch of a tree or any similar object. Many have not two toes permanently directed backward, but have the power of turning one of the front toes backward at pleasure. Some have only three toes, yet on other accounts are ranked in this order. The families of the climbers, however, differ very much in many respects, although agreeing in the structure of their feet. To this order belong parrots, toucans, trogons, barbets, woodpeckers and cuckoos. It has been objected to the name climbers, that although very descriptive of the habits of some birds of this order, as woodpeckers, it is not very applicable to others, as cuckoos, while there are birds of other orders, as creepers, which possess this habit in the greatest degree; and the name has been changed by some ornithologists into *Yoke-footed* or *Zygodactylous birds*. It is generally the outer front toe which is directed backward in this order; but in the trogons, the first and second toes are opposed to the third and fourth.

CLIMBING FERNS: see FERNS.

CLIMBING PERCH (*Anabas scandens*): the only well-

ascertained species of a genus of fishes from which the family *Anabasidæ* (q.v.) derives its name. It is native of rivers and ponds in most parts of the E. Indies. It is about six inches long. In general form, it somewhat resembles a perch, and the resemblance is increased by the large scales and the spiny dorsal fin. That this fish climbs trees has been asserted by observers whose veracity and accuracy cannot easily be questioned; yet others with ample opportunity of observation express great doubt. In climbing, the fish is said to suspend itself by its spiny gill-covers, and by fixing its anal fin in cavities of the bark, urging its way upward by distending and contracting its body. There is no doubt that it often leaves pools when they are in danger of being dried up, and travels in search of water. Though these fish are sometimes compelled in their distress to travel by day, and have been met in the glare of noon toiling along a dusty road, their migrations are generally performed at night or in early morning, while the grass is still wet with dew. Climbing perches are plentiful in the Ganges, and the boatmen have been known to keep them for five or six days in an earthern pot without water, using daily such of them as they wanted, and finding them as lively as when just caught.

CLIMBING PLANTS, or CLIMBERS: in the most extensive and popular sense, those plants which, having weak stems, seek support from other objects, chiefly from other plants, in order to ascend from the ground. This, however, is accomplished in very different ways. Some climb by means of small root-like processes growing from the stem, as the ivy; some by means of *cirri* or tendrils, which twine round branches of trees, etc. (see CIRRUS); some by adhering disks, of which a beautiful instance is seen in the well-known Virginia creeper; and many by the twining of their own stems around those to which they cling. Twining plants generally turn only in one direction, either from right to left, or from left to right. The scarlet-runner and passion-flower are examples of the former; the honeysuckle and hop of the latter. Twining plants are not always included under the designation climbing plants. The woody twining plants which form one of the most remarkable features of tropical forests, are often called *Lianas* (q.v.).

CLIME, n. *klīm* [Gr. *klima;* L. *clima,* a climate]: poetic, and rhetorical for CLIMATE, which see.

CLINANDRIUM, n. *klī-năn′dri-ŭm* [Gr. *klinē,* a bed, *andră,* a man]: in *bot.*, that part of the column of orchideous plants in which the anther lies. CLINAN′THIUM, n. *-thĭ-ŭm* [Gr. *anthos,* a flower]: in *bot.*, a receptacle of flowers which is not of a fleshy consistency, as in *Compositæ.*

CLINCH, v. *klĭnsh* [Dut. *klinken,* to clink or rivet: Dan. *klinke,* a rivet: Norm. F. *clanche;* Ger. *klinke,* the latch of a door]: to fix firmly by folding over; to grasp with the hand; to rivet; N. anything which holds both ways; a pun. CLINCH′ING, imp.: N. the fastening of a bolt or nail by

hammering the point so as to turn it over like a hook. CLINCHED, pp. *klĭnsht.* CLINCH'ER, a. *-ẽr,* overlaying or overlapping, like slates on a roof—applied to the planking of a ship, as *clincher-work:* N. one who makes a smart or unanswerable reply; the reply itself. CLINCHER-BUILT, or CLINKER-BUILT, *klĭngk'ẽr,* applied to a boat or ship whose outside plankings overlap each other like slates on a roof. To CLINCH, or CLENCH THE FIST, to contract the fingers firmly and closely into the palm of the hand so as to form a ball. To CLINCH AN ARGUMENT, to place it in a firm and unassailable position.

CLINCH'ER-BUILT, or CLINKER-BUILT: in *ship-building,* when the lower edges of the side-planks overlap the row next under them, like slates on the roof of a house. If the planks are all smooth, meeting edge to edge, the construction is called *carvel-built.* This construction requires that the seams should be very close, and calked with oakum. Boats are often *diagonal-built;* two layers of planking, rising in opposite directions from the keel at an angle of 45°. In iron ships, the clincher arrangement is called *lap-jointed,* and the carvel arrangement, *jump-jointed.*

CLINCH RIVER: in s.w. Va. and e. Tenn. It rises among the hills of Tazewell co., Va., flows s.w. by w. between the ranges of Clinch and Powell Mts., and joins the Holston at Kingston, Roane co., Tenn., to form the Tennessee river. It is about 250 m. long, and navigable by small boats in the lower part.

CLING, v. *klĭng* [AS. *clingan,* to shrink or wither: Dan. *klynge,* to cluster: Sw. *klœnga,* to clutch, to climb]: to adhere closely; to stick to firmly, as an interest; to hold fast to by entwining or embracing, as in affection; in *OE.,* to dry up or consume. CLING'ING, imp. CLUNG, pt. and pp. *klŭng.*

CLINGMAN'S DOME, *klĭng'manz-dōm:* in Jackson co., N. C., on the border of Sevier co., Tenn. It is the highest peak of the great Smoky Mts., 6,660 ft. above the sea, and next in altitude to the Appalachian Mts. It was named from Thomas Lanier Clingman, who determined its height 1858.

CLINICAL, a. *klĭn'ĭ-kăl,* or CLIN'IC [Gr. *klinĭkos,* belonging to a bed—from *klinē,* a bed, mid. L. *clinĭcus,* a physician who visits patients in bed]: pertaining to a bed. CLINICAL LECTURE, instruction given to medical students by a professor at a sick-bed. CLIN'ICALLY, ad. *-lĭ,* by the bedside. CLINIC BAPTISM, in the *anc. church,* baptism administered to a person on a sick-bed or death-bed. CLINIC MEDICINE, department of medicine occupied with the investigation of diseases at the bedside, or individually. CLINOID, *klī'noyd* [Gr. *eidos,* resemblance]: in *anat.,* applied to certain processes of the sphenoid bone having a supposed resemblance to a couch.

CLINK, v. *klĭngk* [Ger. *klingen,* to tingle: Icel. *kl ng,* ting-ting; *klingja,* to ring: Dut. *klinken,* to sound, to tinkle: Gael. *gliong,* to ring as metal—*clink* is derived from *clang,*

as expressing a shriller sound]: to jingle; to make a small, sharp, ringing noise: N. a sharp ring or jingle of small, metallic bodies, as coins; a sharp metallic knock or knocking. CLINK'ING, imp. CLINKED, pp. *klĭngkt.* CLINKER, n. *klĭngk'ėr* [Dut. *klinker,* that which sounds]: in *min.,* the black oxide of iron; the slaggy, ferruginous crusts that form on the bars of engine-furnaces: PLU. very hard bricks; bricks run together and glazed over by excessive heat. CLINKER-BAR, in a *steam-engine,* the bar fixed across the top of the ash-pit. CLINK-STONE, or PHO'NOLITE, grayish-green felspathic rock, remarkable for its tendency to lamination, which is sometimes such that it affords tiles for roofing. It is a compact homogeneous rock, passing gradually into gray basalt. The slabs give a metallic ring or 'clink' when struck with a hammer, whence its name. It occurs in volcanic districts

CLINKER-BUILT: see CLINCHER-BUILT.

CLINODIAGONAL, n. *klī-no-dī-ăg'o-năl* [Gr. *klino,* to bend; Eng. *diagonal* (q.v.)]: in *crystal.,* a diagonal or lateral axis in monoclinic crystals, forming an oblique angle with the vertical axis: ADJ. pertaining to or in the same line as the clinodiagonal.

CLINOGRAPHIC, a. *klī-no-grăf'ĭk* [Gr. *graphō,* I write]: pertaining to a mode of projection in drawing in which the rays are assumed to fall obliquely on the plane of projection.

CLINOMETER, n. *klī-nŏm'ĕ-tėr* [Gr. *klinein,* to incline; *metron,* a measure]: instrument for measuring the dip or angle at which strata incline from the horizon. It consists of a compass provided with a small spirit-level; and on the lid—which can be fixed at right angles to the compass-box—there is a small graduated quadrant, and a plumb-line.

CLINTON, *klĭn'ton:* city, cap. of Clinton co., Iowa; on the Mississippi, 42 m. n.e. of Davenport, 138 m. w. of Chicago by the Chicago and Northwestern railroad, which has its repair shops here. It is the eastern terminus of the Iowa Midland, and connected with Dubuque, n.w., by another railway. The river here is spanned by 3 bridges, one 4,100 ft. long, which cost $600,000. Clinton contains Wartbury Lutheran College, academies, and business colleges, has large saw-mills, a paper-mill, foundries, sash and blind factories, etc., besides an extensive general trade. It is a growing manufacturing town. Pop. (1900) 22,698; (1910) 25,577.

CLINTON: manufacturing town of Worcester co., Mass., 45 m. w. of Boston by the Boston and Fitchburg railroad, 16 m. n.n.e. of Worcester by the Worcester and Nashua. The Nashua river supplies water power to a number of establishments, of which the chief are the Lancaster mills, producing ginghams and plaids, and the Bigelaw Co., which makes Brussels carpets. There are also cotton mills, and manufactures of wire-cloth, hollow-ware, boots and shoes, and machinery. C. has municipal waterworks, a fine public library and a park. Pop. (1910) 13,075.

CLINTON, Mo.: a city and county seat of Henry county, 37 miles northwest of Sedalia, on Missouri, K. & T., the St. Louis & San F., and Kansas City, Clinton & Springfield railroads. Clinton has flour mills, corn-meal mills, cooperage and railroad division shops, ice plant and foundry and gas-engine factory. It has two banks Clinton has an excellent public school system, and also colleges for men and women, including Bind College for women and Clinton Business College. The city was first settled in 1837, became a borough in 1858 and a city in 1876. It is governed by a mayor and a council of eight members elected for two years. Pop. (1910) 4,992.

CLINTON: village of Oneida co., N. Y., 8 m. w. by s. of Utica. It is on the Oriskany creek and on the Chenango canal; branch railroads connect it with Utica, Rome, and points to the south. It has a weekly paper, several churches and academies, and stone quarries near. It is noted chiefly as the seat of Hamilton College. Pop. (1910) 1,236.

CLINTON, Charles: 1690-1773, Nov. 19; b. co. Longford, Ireland, founder of the Clinton family in America. One of his grandfathers was an officer of Charles I., the other a capt. under Cromwell. With friends he chartered a ship and sailed 1729, May 20, for Philadelphia. The captain endeavored to starve his passengers, and succeeded with some, including two children of C.; the survivors were landed on Cape Cod, Oct. 4. C. settled, 1731, in Ulster co., N. Y., 60 m. n. of New York and 6 m. w. of the Hudson. He became co. judge and lieut.-col. of militia, and served with the same rank at the siege and taking of Fort Frontenac, 1758. He died in what is now Orange co., N. Y.

CLINTON, De Witt: statesman: 1769, Mar. 2—1828, Feb. 11; b. Little Britain, Orange co., N. Y.; son of James C. and Mary De Witt. He graduated at Columbia College 1786, was admitted to the bar, and at once dashed impetuously into political literature with letters signed 'A Countryman,' in answer to *The Federalist*. This kind of activity he kept up while sec., 1790-95, to his uncle George, then gov. of N. Y., and became a leading champion of the republican or anti-federalist party. He married about 1796 Maria Franklin, who died 1818. He was in the assembly 1797, and in the state senate 1798-1802; here he labored for public defenses, sanitary laws, steam navigation, the abolition of slavery, the relief of prisoners for debt, and the encouragement of agriculture, manufactures, and arts. As a member of the governor's council, 1801, he claimed for that body the coördinate right of nomination to offices: the question was referred to the legislature, and thence to a convention which amended the state constitution to secure the end desired. Clinton was sent to the United States senate 1802, and there made a strong speech against war with Spain, in view of an excitement over La. and the navigation of the Mississippi. He soon resigned to become mayor of New York, on the appointment of his uncle (now again gov.) and a republican council. This office, which then carried with it the presidency of the council and of

the court of common pleas, he held 1803–7, 1809–10, and 1811–15, being thrice removed and twice reinstated. Not shrinking from the cares of double office, he was also state senator 1805–11, and lieut.gov. 1811–13. On his uncle's acceptance of the vice-presidency and practical retirement from state politics C. became leader of the republican party in N. Y. A vehement partisan, unsparing toward political foes, he had at every stage of his career many bitter enemies; yet it was his curious fate through independence of judgment and action to alienate most of his supporters, and to be in large measure disowned by his party. Not thoroughly in sympathy with Jefferson and Madison, and strongly opposed to the war of 1812, he began to be suspected as a federalist; his standing as a peace candidate for the presidency, 1812, was counted full proof of self-seeking disloyalty. He received 89 electoral votes against Madison's 128: he had apparently staked all upon this issue, and the defeat meant political ruin. With only the mayoralty left, he threw himself into municipal affairs, developed the public school system, bore a leading part in founding the Historical Soc., the Acad. of Fine Arts, and the Literary and Philos. Soc., and sought to improve the criminal laws, to relieve poverty, and in many ways to exercise a large-minded public spirit. He thus made friends and a reputation outside of party, that stood by him in after years, and supported his efforts to compass a larger and more beneficent end. The greatness of the man shone forth when the politician had fallen, seemingly never to rise again. Thrust out of office 1815, Jan., and broken in fortune, he retired to the country, and busied himself with the great work of his life. He had long before taken up his uncle's idea of a canal, had been one of seven commissioners, 1809, to survey a route from the Hudson to the lakes, and had been sent, 1812, by the legislature to urge the project upon congress, which declined to do anything. The war had for a time discouraged any such enterprise, but C. now returned to the charge, and in the autumn submitted to the legislature an able and exhaustive argument and petition for the construction of the Erie and Champlain canals. This was adopted by public meetings in New York and elsewhere, and vigorously enforced by its author, against the opposition of many who derided 'Clinton's folly' and 'the big ditch.' The legislature appointed him a commissioner to make estimates and surveys, and authorized the construction, which began 1817, July 4, the ground being broken by his own hand. He had been carried into the governorship on a wave of popular favor, and through two terms actively urged on the work. He declined a reëlection 1822, and resumed the presidency of the canal board. From this post his political enemies removed him 1824; but their virulence defeated its own end, arousing an indignant feeling which reëlected him by 16,000 majority 1824. The canal was opened with great festivities, Oct. 25, and Gov. C. rode in triumph on a barge from Lake Erie to New York. The immense accession of business, prosperity, and population which came through

the canal gave him high rank among the benefactors of the state, and even of the nation; for the new water-way directly affected the northwest, and gave the powerful stimulus of example to the undertaking of similar improvements elsewhere. C. declined, 1825, the English mission, offered him by Pres. John Quincy Adams; he was reëlected 1826, and died suddenly at Albany while in office. In the history of N. Y. his name stands unrivalled. One of his biographers says that he was considered 'the most rising man in the Union,' 1803; but his strong local patriotism had caused him then to prefer the service of the city to that of the country, and the failure, 1812, of his aspirations toward national leadership concentrated his efforts on the state His publications consisted of a *Memoir on the Antiquities of Western N. Y.* (1818), *Letters on the Natural History and Internal Resources of N. Y.* (1822), and speeches, addresses, etc., incorporated in W. W. Campbell's *Life* of him (1849). His life was written also by D. Hosack (1829), and Prof. James Renwick (1834).

CLINTON, George: gov. of N. Y. and fourth vice-pres. of the United States; 1739, July 26—1812, Apr. 20; b. Little Britain, N. Y.; youngest son of Charles C. While a boy he went privateering, and served as a lieut. against Fort Frontenac 1758. He was a member of the colonial assembly from 1768 of the continental congress 1775–76, and of the N. Y. provincial congress 1777; brig.gen. the same year, and gov. of N. Y. by successive elections 1777–95, and again 1801–03. Here his services were eminent both in civil and in military matters, though he had lost the Highland forts 1777, and though, holding to the doctrine of state rights, he opposed the federal constitution, 1788. On a trip taken with Washington and Hamilton 1783, he conceived the idea of a canal between the Mohawk and Wood Creek, which he urged on the legislature 1791, and which was afterward carried out by his nephew. He received fifty electoral votes for pres. 1792, and six 1808. He was in the N. Y. legislature 1801, and vice-pres. of the United States 1805–12, under Jefferson and Madison. His casting vote in the senate defeated the renewal of the U. S. Bank charter 1811, Jan. 24. His energy and force of will made him long paramount in N. Y. politics. He died at Washington while in office. He must be distinguished from his namesake Admiral C., gov. of N. Y. 1743–53.

CLINTON, Sir Henry: 1738–95, Dec. 23; grandson of Francis, sixth earl of Lincoln, and son of Admiral George C., British gov. of Newfoundland and N. Y. He became capt. in the guards 1758; was sent to Boston as a maj.gen. 1775, May; took part at Bunker's Hill, June 17; and in the attack on Fort Moultrie in Charleston harbor 1776, June 28, sailed thence to New York, served for some time under Howe, and was left in command 1777. He stormed Forts Clinton and Montgomery in Sep., and tried in vain to relieve Burgoyne. Made K.C.B. and lieut.gen., he succeeded Howe as commander-in-chief 1778, Apr. He evacuated Philadelphia June, and retreated to New York, fighting at

Monmouth on the way. In an expedition into N. J. 1779, his troops committed outrages for which he was blamed. He sailed for S. C., Dec., and captured Charleston with Gen. Lincoln's army 1780, May 12. Returning to New York, he tried to obtain West Point by Arnold's treason, was virtually blockaded by Washington, made a vain effort to relieve Cornwallis, was superseded by Carleton, and returned 1782 to England where he published *A Narration of the Campaign in* 1781 (1783), and had a controversy with Cornwallis. He was sent to parliament, made gov. of Limerick, and 1793 gov. of Gibraltar, where he died.

CLINTON, James: 1736, Aug. 9—1812, Dec. 22; b. Ulster co., N. Y.: general; third son of Charles Clinton. As a capt. at Frontenac, 1758, he captured a French war vessel on lake Ontario. He commanded four regts. levied 1763 to protect the frontiers of Ulster and Orange from Indian incursions. He was made col. of the 3d. N. Y. 1775, June 30, and brig.-gen. 1776, Aug. 9. With 600 militia he defended Fort Clinton 1777, Oct., against 3,000 British, and was the last to leave the works; though severely wounded, he escaped by sliding down a precipice. Joining Gen. Sullivan 1779 with 1,600 men, he defeated the Indians at Newtown (now Elmira), destroyed their villages, and drove them to Niagara. He held command for some time at Albany, and saw the surrender of Cornwallis at Yorktown and the evacuation of New York. After the war he was a commissioner to adjust the Penn. boundary, member of the convention which ratified the federal constitution, and of both houses of the N. Y. legislature. He died at his birthplace.

CLIO, n. *klī′ō* [L. *Clio*—from Gr. *Kleio*—from *kleio*, I celebrate]: in Grecian *myth.*, daughter of Jupiter and Mnemosyne, the mother of Hyacinthus and Hymenæus. She was the muse of history and epic poetry, and was represented as bearing a half-opened roll of a book.

CLIO: genus of shell-less pteropodous mollusks, of which one species, *C. borealis*, is extremely abundant in the Arctic seas, and constitutes a principal part of the food of whales, so that indeed the name *whale's food* is often given to it by whale-fishers. It is scarcely an inch long; the head is furnished with six retractile tentacula; the organs of locomotion are two delicate fins, attached to the neck, and which in swimming are brought almost into contact, first above, then below. It is an active little creature, often coming for an instant to the surface of the water in calm weather, and then suddenly diving away into the depths. Myriads are seen together, and the water is sometimes so full of them, that a whale cannot open its mouth without engulfing them in great numbers. *C. australis* is almost as abundant in the southern seas as *C. borealis* in the northern.

CLIP, v. *klĭp* [a word imitative of the snapping noise made by shears: Dan. *klippe*, to clip or cut: Sw. *klippa*, to

clip, to wink: Ger. *klippen,* to clink: Icel. *klippur,* shears]: to cut off with shears or scissors, to pare; to cut short: N. a sheep-shearing; that which is shorn off the sheep. CLIPPING, imp.: N. the part cut off. CLIPPED, pp. *klĭpt;* also CLIPT, pt. and pp. CLIP'PER, n. one who; a fast-sailing ship. TO CLIP ONE'S WINGS, to put a check upon one's projects or schemes.

CLIP, v. *klĭp* [Dut. *klippe,* a fetter: prov. Sw. *klippa,* to compress]: in *OE.,* to enfold in the arms; to embrace; to encompass; to contain: N. an embrace; a fastener or holder, as for letters. *Note.*—The two preceding entries are connected in sense and etymology, because the ideas *clasping, grasping,* and *cutting* are clearly interchangeable, and derivable the one from the other.

CLIPPER: name familiarly given to a ship built expressly for speed. The requirements of trades in which the merchandise carried was perishable so that a quick passage was desirable seem to have directed scientific attention to the *lines* of vessels for ascertaining the form offering least resistance to the water. The modifications of the old form of vessel have been gradual, the desideratum aimed at being the combination of the greatest carrying capacity with the form best adapted for speed. A clipper, as compared with an ordinary sailing-ship, is longer and narrower (though of late the tendency has been to increase the beam); very sharp at the bows, which are generally hollowed more or less below the water-line; gracefully fined away toward the stern, which is usually elliptical; and, altogether, presenting the contrast of the race-horse to the beast of burden.

CLIQUE, n. *klēk* [F. *clique;* Ger. *klicke,* a faction, a party]: persons usually associated for the furtherance of a common purpose, generally in an objectionable sense; a party; a coterie; a set or party. CLIQ'UISH, a. *-ĭsh,* relating to a clique.

CLITELLUM, n. *klī-tĕl'lŭm* [L. *clitellæ,* a pack-saddle]: the thickened part of the body of some worms, as the earthworm, developed in connection with the reproductive organs.

CLITUMNUS, *kli-tŭm'nus* (now CLITUMNO, *kle-tôm'no*): small river of Umbria in ancient Italy. It rises s. of Spoleto, flows n. and e., and under the name of the Tinia or Timia joins the Tiber, lat. 43° n. It was a favorite resort of the Romans, and noted for the clearness of its waters and the beauty of its banks. Pliny describes its pastures, groves, and herds. A temple of Jupiter Clitumnus stood at lat 42° 51′ n., long. 12° 48′ e. A peculiar breed of cattle supposed to become white from drinking of the stream, were greatly valued for sacrifices, and led with flower-wreaths and gilded horns in triumphs.

CLITUS, or CLEITUS, *klī'tus:* foster-brother of Alexander the Great, whose life he saved at the battle of the Granicus, B.C. 334, by cutting off an arm outstretched to

slay. He was made commander of a div. of the royal guards and appointed, B.C. 328, satrap of Bactria. The night before he was to start for his province, the king gave a feast at Maracanda in Sogdiana in honor of the Dioscuri. Both drank freely. Clitus imprudently rated the glory of Philip above that of his son, and Alexander, enraged, killed him with a spear. The king's remorse was poignant, and Clitus was buried with great honors.

CLIVE, *klīv*, ROBERT, Lord Baron of Plassey: 1725-1774, Nov. 22; b. Styche, Shropshire, England: warrior-statesman, founder of British supremacy in India. At school he had little aptitude for learning, but was noted for his mischievous propensities and his fearless disposition. The monotony of a clerkship in the India Civil Service at Madras, where he arrived 1744, had literally nearly been the death of him; it was with great joy, therefore, that he abandoned the pen for the sword, when some three years after his arrival the troubles accumulating upon the English in India gave him an opportunity of doing so. Clive had now found his true sphere. The bold, fearless character had now scope enough for its development; the intellect which, chained to the desk, had seemed of the dullest and most common-place kind, in the freedom of the field became at once quick, comprehensive, and original. When Clive grasped the sword, English influence in India was almost extinct; the French and their allies had scarcely left them even a material footing. Yet in less than half a dozen years after Clive had, 1751, Aug., with 200 English infantry and 300 sepoos, marched out of Fort St. David on his hazardous enterprise to attack Arcot, a city of 100,000 inhabitants, and garrisoned by 1,200 or 1,500 of Chunda Sahib's best troops, amply supplied with artillery, the decisive battle of Plassey had been fought, and English power established on the ruin of that of France and the native princes. The daring shown in the capture of Arcot, and the intrepidity and fortitude of its defense by Clive and his little band, reduced to 200 men, against an army of 10,000, was the foundation of England's subsequent greatness and glory in India. Clive's name henceforward was a tower of strength in India, where he was surnamed by the natives *Sabat Jung*, or 'the Daring in War.' Victory marched with him alike against native warriors, French, and Dutch. Unscrupulous as to his means, he would undoubtedly have found himself involved in many difficulties had not his questionable action been invariably crowned, and thus—in the lax political notions of the time—justified by success. Nothing remaining for him to do in India, he returned to England 1760, and received the warm thanks of the E. India Company and an Irish peerage from the government for his services. His wealth, arising from shares in various spoils, presents and grants of territory from native princes, was enormous. After his departure from India, the company's affairs, through the dishonesty of its servants, high and low, fell into the greatest confusion, and Clive, 1764, was chosen to

set them right. He proved himself as competent an administrator as he was a warrior. Uncompromising and resolute, he bore down every opposition to his plans, all the more sternly that he found it in some cases assuming the form of threats. In less than 18 months, he had 'restored perfect order and discipline in both the civil and military services, and brought back prosperity to the well-nigh ruined finances of the company.' He returned to England 1767, and was received with the distinction to which his important services entitled him. But the energetic way in which he had righted matters in India gave offense to those who suffered from the suppression of dishonest practices, many of whom were not without influence in the mother-country. This influence they employed to stir up ill-feeling against Clive; and his proceedings in India were made the subject of animadversion in parliament 1772, and in the following year matter for the inquiry of a select parliamentary committee; who, however, failed to find that Clive had acquired his great wealth by abuse of power, as his enemies had asserted. The form of acquittal, however, was not quite satisfactory to Clive, who never recovered from the disgrace implied in the trial, and ended his life by suicide. See Malleson's *Clive* (1882).

CLOACA, n. *klō-ā′kă* [L. *clŏācă*, a drain or sewer: comp. Gael. *clodach*, dirt, ordure]: a large sewer; in *zool.*, that part of the intestines of birds, many fishes and reptiles—also in one order of mammals, the *Monotremata*—in which the intestinal, ovarian, and urinary outlets terminate (see BIRDS). CLOACAL, a. *klō-ā′kăl*, relating to or connected with.

CLOACA MAXIMA, *klō-ā′ka măks′ĭ-mâ:* subterranean passage of vast extent, by which the whole, or a great part, of the filth of ancient Rome was conveyed to the Tiber. Drains from the lower parts of the city around the Forum, and from the other valleys, were commenced by Tarquinius Priscus; but the construction of the Cloaca Maxima is attributed by Livy to Tarquinius Superbus. Niebuhr is of opinion that it was at first intended to drain the valley of the Forum; but it appears to have been subsequently extended and connected with the smaller cloacæ. Running from the Forum past the temple of Vesta, it terminated at the Tiber, where the mouth of it is still visible. It consisted of three large arches, one within the other. The space enclosed by the innermost vault was upwards of 13 ft. in width, and of a corresponding height. The arches were built of large blocks of stone, fixed together without cement, of the uniform size of rather more than five ft. five inches long and three ft. high. The species of stone used bears evidence to the antiquity of the construction, being the material used in the most ancient public edifices. The sewer was kept in a state of efficiency by a continual stream of superfluous water from the aqueducts. Large portions of this and of the other cloacæ remain, in some places still visible, but generally buried, by the accumulation of soil.

at a considerable depth below the present level of the streets. During the Republic, the surveillance of the Roman cloacæ was one of the duties performed by the censors. The cloaca maxima was subjected to repair by Cato and his colleague in the censorship. Agrippa, when ædile, obtained praise for his exertions in cleansing and repairing the cloacæ, and is recorded to have passed through them in a boat. Under the empire, officers called *curatores cloacarum urbis* were appointed for their supervision. So thoroughly was the city undermined by these large sewers, that Pliny calls it *urbs pensilis*, a city suspended in the air rather than resting upon the earth. Drains of the same description, but of smaller dimensions, existed in some other ancient Roman cities. The Romans had a goddess of sewers, Cloacina, whose name appears at a very early period.

CLOAK, n. *klōk* [OF. *cloque*—from mid. L. *cloca*, a bell: Flem. *klocke*, a gown: Bohem. *klok*, a woman's mantle (see CLOCK 1)]: a loose outer garment without sleeves, covering the whole body, and extending from the neck downward, often as far as the ankles—so named from its original bell-shape; that which conceals; a pretext; an excuse. CLOAK, OE. CLOKE, v. *klōk*, to cover with a cloak; to hide or conceal; to employ a false covering. CLOAK'ING, imp. CLOAKED, pp. *klōkt*. *Note.*—CLOAK signifies a mantle, a cover; *palliate*—from L. *palliŭm*, a cloak or mantle, originally signified the same; but now their derived meanings are diverse, *cloak* meaning to conceal or cover as a fault, while *palliate* means, to excuse, to render a fault less odious by explanations and redeeming circumstances.—SYN. of 'cloak, v.': to mask; blind; veil; hide; conceal; palliate.

CLOCK, n. *klŏk* [F. *cloche;* Ger. *glocke;* Dut. *klocke*, a bell: Gael. *clog*, a bell; *clag*, to ring: Ir. *clogan*, a little bell; *clogaim*, I ring]: a machine which indicates the time of day, and strikes the hours: see HOROLOGY. CLOCKMAKER, one who makes clocks. CLOCK-WORK, mechanism like a clock. O'CLOCK, contraction for 'time of the clock.'

CLOCK, n. *klŏk* [Icel. *klaeg*, a horse fly]: familiar name of the common beetle; also CLOCK'ER, n.

CLOCK, n. *klŏk* [an imitative word: Dut. *klocken*]: the cry of the brooding hen: see CLUCK.

CLOD, n. *klŏd* [Gael. *clod*, a turf, a sod: Dan. *klods;* Sw. *klots*, a block, a log; Dan. *klat*, a spot, a lump]: a hard lump of earth of any kind; earth, ground, or turf; a stupid fellow; a dolt. CLOD'DY, a. *-dĭ*, consisting of clods. CLOD'-HOPPER, n. a rustic; a peasant. CLOD'DISH, a. lumpish; boorish. CLOD'POLL, n. [*poll*, the head]: a stupid fellow.

CLODIUS PULCHER, *klō'dĭ-us pŭl'kẽr*, PUBLIUS (real name PUBLIUS CLAUDIUS PULCHER): Roman demagogue and debauchee, noted from his connections with Cæsar and Cicero. He served in Asia under Lucullus B.C. 70, and impeached Catiline 69 for extortion in Africa. Disguised as a woman, he intruded, B.C. 62, into the mysteries of Bona

Dea at Cæsar's house: for this cause Cæsar divorced his wife, who 'must be above suspicion.' Tried for sacrilege, Clodius escaped by bribery: Cicero refused to defend him and testified against him, but Cæsar was a witness in his favor, and helped him (as did Pompey and Crassus) to become tribune B.C. 59. He then procured Cicero's banishment for a year, and pursued that orator with steady malignity. Clodius and Milo, being rival candidates for pretor, encountered each other with their retinues between Rome and Lanuvium B.C. 52, Jan. 20; a fight ensued, and Clodius was killed. Cicero defended Milo in a famous oration. The mob, with whom Clodius was in high favor (he had changed his name from Claudius to please them), raised a tumult, and Pompey was made sole consul.

CLOFF: see CLOUGH.

CLOG, n. *klŏg* [Gael. *ploc*, any round mass: Scot. *clag*, to cover with mud: Dan. *klag*, mud]: a hindrance by reason of something adhesive and heavy; an impediment; anything that hinders motion: V. to impede motion by something adhesive and heavy; to fill with that which hinders motion; to burden; to embarrass; to render difficult; to adhere in a cluster or mass. CLOG'GING, imp. CLOGGED, pp. *klŏgd*. CLOG'GY, a. *-gĭ*, that has power to clog; thick. CLOG'GINESS, n. the state of being clogged.—SYN. of 'clog, v.': to encumber; impede; obstruct; embarrass; fetter; retard; prevent; shackle; hinder; burden; restrict; restrain.

CLOG, n. *klŏg* [Ger. *klotz*, a log, a clog: F. *claque*, an overshoe: It. *clacche*, clogs]: a short, thick piece of wood; a wooden shoe—so named from its lumpy, shapeless form; a shoe with a wooden sole.

CLOISONÉE: see ENAMEL.

CLOISTER, n. *kloy'ster* [Ger. *kloster*, a cloister: F. *cloître*—from OF. *cloistre*, a monastery—from L. *claustrum*, an inclosure]: a square inclosed by buildings having a piazza on its four sides; a monastery or nunnery, so named from the cloister being the principal part; the piazza of an inclosed court, a wall with a projecting cover; an arcade: V. to confine in a monastery; to shut up in retirement. CLOI'STERING, imp. CLOISTERED, pp. *kloy'stĕrd*. CLOI'STERAL, a. confined to a cloister; retired from the world. CLOI'STERER, n. *-ĕr*, one who. CLOISTRESS, n. *kloy'strĕs*, a woman living in a cloister, a nun.—SYN. of 'cloister, n.': monastery, nunnery; convent, priory; abbey.

CLOIS'TER, covered passage, or ambulatory, around the walls of certain portions of monastic and collegiate buildings. The cloister usually surrounded or formed a covered passage along three sides of a quadrangular area, which was called the *C. garth*. The roof of the cloister, often vaulted, was supported on the side next to the quadrangle by pillars and arches, which were frequently ornamentally combined like trifolial arches, and, like them, occupied by tracery. The upper portions of these arches, above the mullions, were often

glazed; and sometimes, latterly, even the whole arches, so that they became a row of windows, as at Gloucester. Cloisters were used for exercise and recreation by the inmates of the religious houses. Occasionally, when wholly glazed, they had cells or stalls for study on the inner side; and very frequently a stone bench may still be seen along the same side. Many of the larger monasteries had more cloisters than one; and so characteristic were they of the religious houses, that the term cloister came to be used in a general sense for the whole establishment, which is still the sense of the word *kloster* in German. See MONASTERY.

CLOKE, v. *klōk:* the OE. spelling of CLOAK, which see.

CLONDYKE: see KLONDIKE.

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